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Sauget Sites Area 2 - St. Clair County L1631210001 ILD000605790 Superfund/HRS **CERCLA Expanded Site** Inspection Report **Illinois Environmental Protection Agency** 2200 Churchill Road P.O. Box 19276 Springfield, IL 62794-9276

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## SECTION 1

#### INTRODUCTION

The Illinois Environmental Protection Agency's (IEPA or Agency) Pre-Remedial program was tasked by Region V of the United States Environmental Protection Agency (USEPA) on September 21, 1993 to conduct an Expanded Site Inspection (ESI) of the Sauget Area 2 sites located in Sauget, St. Clair County, Illinois.

The sites have been added to the Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS) over a period of time. These actions were taken as a result of the concern over the threat to human health and the environment that the sites are believed to pose. The sites have been evaluated in the form of CERCLA Preliminary Assessments performed by the IEPA; an Expanded Site Investigation performed by Ecology and Environment in 1986, and a Screening Site Inspection performed by the IEPA's Pre-Remedial Unit in the summer of 1991, along with several other separate sampling events.

The purpose of the ESI has been stated by USEPA in a directive outlining Pre-Remedial program strategies. The directive states:

The objective of the Expanded Site Inspection (ESI) is to provide documentation for preparing the Hazard Ranking System (HRS) package to support National Priority List (NPL) rulemaking. Remaining HRS information requirements are addressed and site hypothesis not completely supported during previous investigations are evaluated. Expanded SI sampling is designed to satisfy HRS data requirements by documenting observed releases, observed contamination, and levels of

actual contamination at targets. In addition, these investigations collect remaining non-sampling information. Sampling during the ESI includes background and quality assurance/quality control samples to fully document releases and fully document them to the site. Following the ESI, information collected and analytical results will be assembled into a report. USEPA site assessment managers review the ESI report and assign the site a priority for HRS package preparation and proposal to the NPL.

The Region V offices of the U.S. EPA have also requested that the Illinois Environmental Protection Agency identify sites during the ESI that may require removal actions to remediate an immediate human health and/or environmental threat.

It is this author's findings that one of the sites, Site Q, does pose an immediate threat to the human food chain and environmental resources of the Mississippi River that would warrant such a response action. This situation will be addressed later in this report.

#### SECTION 2

#### SITE BACKGROUND

#### 2.1 INTRODUCTION

This section includes descriptive, historical, and regulatory information obtained over the course of the formal CERCLA Expanded Site Inspection (ESI) investigation and previous IEPA activities involving the Sauget Area 2 sites. Section 1.1 of the revised Hazard Ranking System (HRS) defines "site" as: "Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located." This may include sources and the area(s) between sources. Additional information about sources included in the Sauget Area 2 is presented in Section Four of this report.

#### 2.2 SITE DESCRIPTION

### 2.2.1 Introduction

The Sauget Area 2 Sites are comprised of five separate sources of contamination: four landfills: Site Q, Site R, Site P, and "Site S" (as yet to be added to CERCLIS) and the four former settling lagoons which comprise Site O. "Site S" was discovered on an aerial photo dated March 3, 1975, and had been previously unknown. Four sites are situated within the corporate boundary of the village of Sauget and one site is situated within the boundaries of both Sauget and Cahokia in St. Clair County, Illinois.

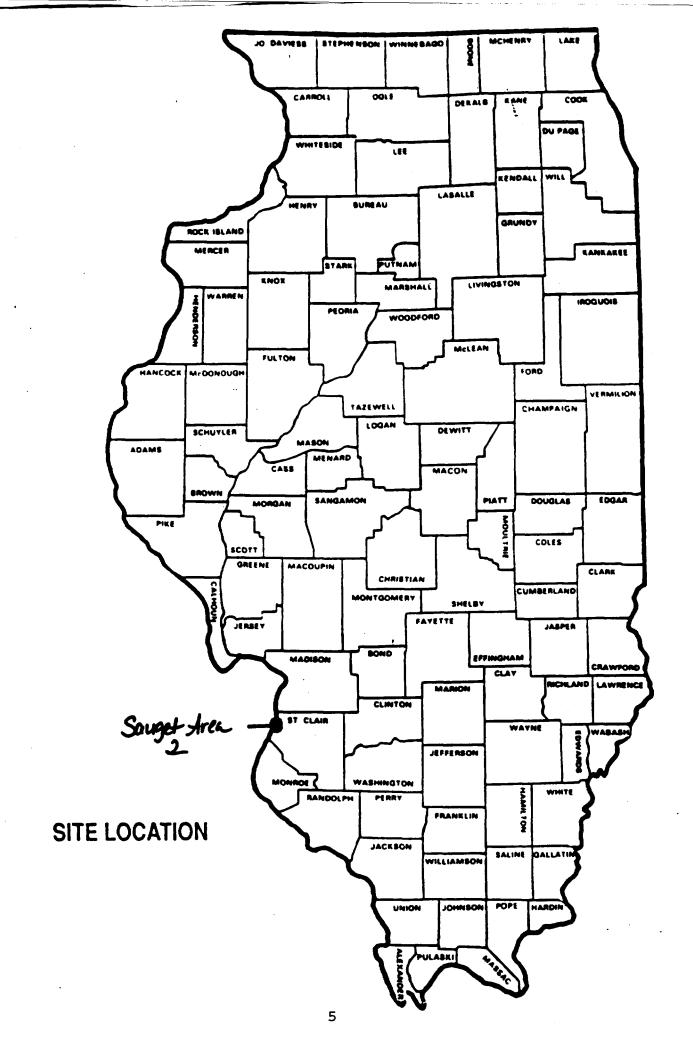
Aggregated Sources at Sauget Sites Area 2

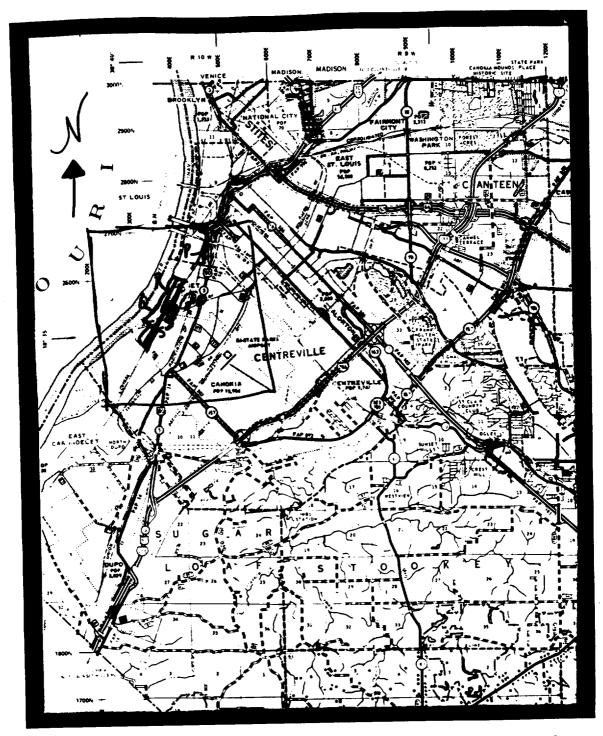
Site Name	Source <u>Type</u>	Source Size	Years of Operation	Owner at time of operation
0	Lagoons	*20	1966-1980	Village of Sauget
Q	Landfill	<b>*</b> 90	1962-1975	Cahokia Trust
P	Landfill	*35	1972-1984	Union Electric Paul Sauget
R	Landfill	*36	1957-1977	Monsanto Chemical Company
s	Landfill	*6	1974 ?	Village of Sauget

<sup>\*</sup>in acres

## 2.2.2 Site 0

Site O of Area 2 consists of four covered sludge dewatering lagoons associated with the old village of Sauget Wastewater Treatment Plant (WWTP). The site covers approximately 20 acres on Mobile Avenue within the corporate limits of the village of Sauget. The site is bordered on the north by the village of Sauget Physical/Chemical Plant, to the northwest by Clayton Chemical, to the east by tracks of the Terminal Railroad and farmland, to the west by Trade Waste Incineration, and to the south by the American Bottoms Regional Treatment Plant (ABRTP), operated by the village of Sauget. The access road for the ABRTP bisects the lagoons. The village of Sauget retains ownership of the lagoons. The lagoons appear to have been excavated into the Henry Formation sands.

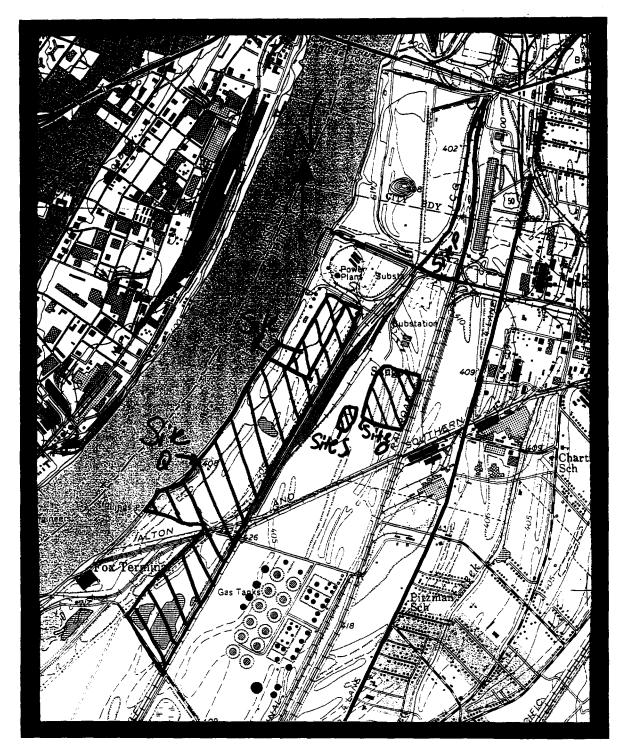




Source: IEPA, 1994. Base Map: Illinois Department of Transportation, 1985.

FIGURE 2-2

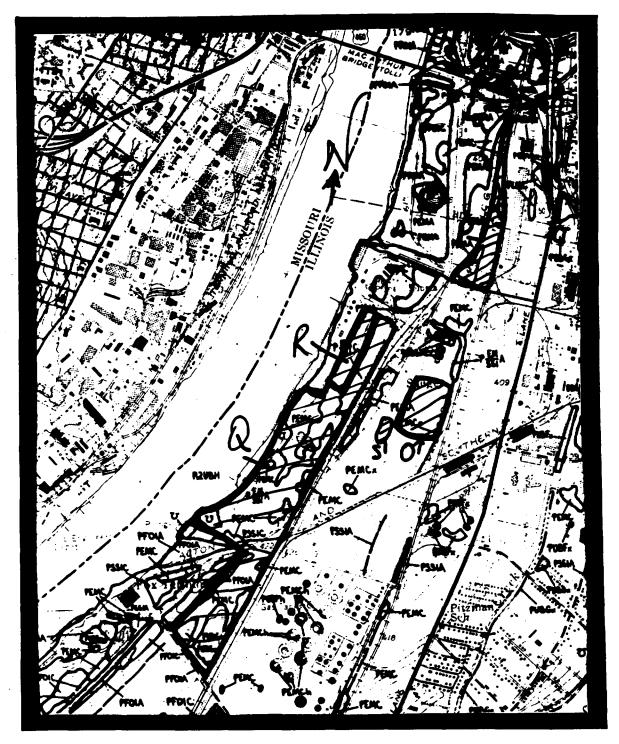
# REGIONAL AREA MAP Scale 1:10560



Source: IEPA, 1994. Base Map: USGS, Cahokia Quadrangle, 1974.

FIGURE 2-3

Scale: 1:2000



Source: IEPA, 1994. Base Map: U.S. Department of the Interior, 1988.

FIGURE 2-4

# WETLANDS INVENTORY MAP

Scale 1:2000

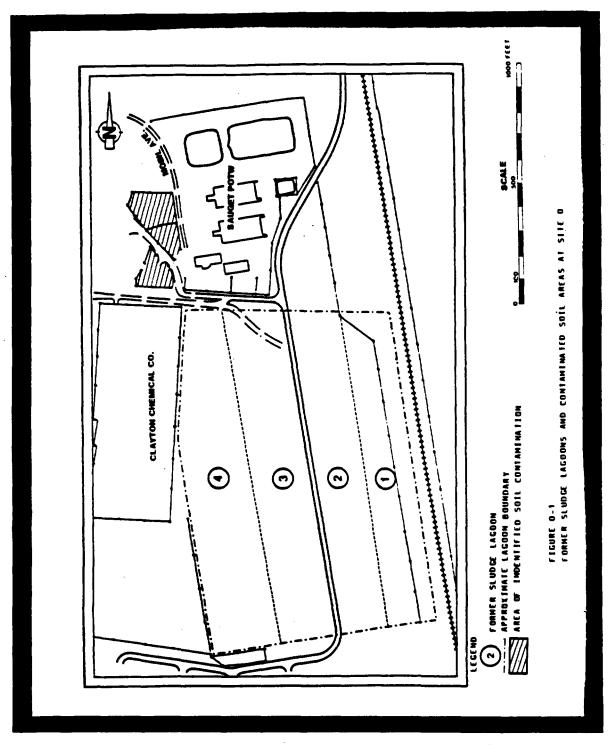


FIGURE 2-5

SITE O - FEATURES

According to the Expanded Site Investigation Report prepared for the IEPA by Ecology and Environment in 1986, the depth of waste in the lagoons is approximately seven feet below the surface. However, the IEPA Expanded Site Inspection sampling team found contamination at a depth of approximately one and one-half to two feet. The lagoons are separated into four sections. Each section is separated by a berm approximately five feet wide. The lagoons were covered with fill in 1978. IEPA was told that a clay cap had been placed upon the lagoons, however, the ESI sampling team did not find any evidence of an engineered clay cap at the site.

## 2.2.3 Site P

The site, also known as P.T.s Showclub/Sauget-Monsanto Landfill, is located along Monsanto Avenue in Sauget. The triangularly-shaped site is approximately 20 acres in size (Refer to Figure 2-6). Site P is located on the eastern side of the U.S. Army Corps of Engineers flood control levee (500-year). The site is bordered on the west by the Illinois Central Gulf Railroad; on the south by Monsanto Avenue; on the east by a spur of the Terminal Railroad Association Railroad. The two railroads converge to delineate the northern boundary of the site. Generally, the geology consists of silty sand, underlain by silty clay, followed by fine to coarsegrained sands down to the bedrock.

The site is covered with black cinders and slag material. Surface drainage is towards the south-central portion of the site, which

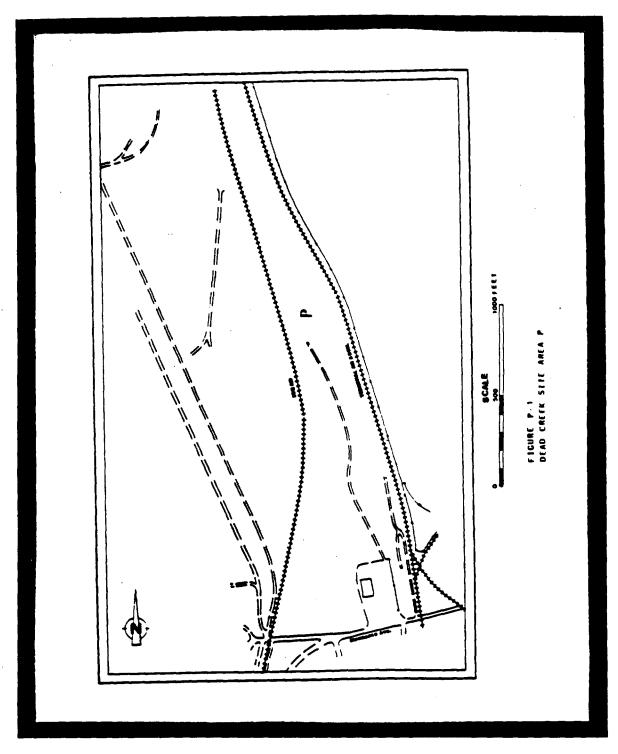


FIGURE 2-6

## SITE P - FEATURES

was not landfilled due to the presence of a potable water line in this area. A low-lying area is also located along the east perimeter, adjacent to the Terminal Railroad. Generally, surface drainage would not leave the site due to the presence of railroad embankments along the perimeter and the depression in the central portion of the site.

According to the National Wetland Inventory maps provided by the Illinois Department of Conservation, the low-lying area along the western boundary of the site has been designated a Palustrine Emergent wetland. It is an isolated wetland, receiving run-off from the elevated portion of the site as well as being influenced by the stage of the Mississippi River. When the river is at an elevated stage, the wetland becomes inundated with groundwater.

## 2.2.4 Site Q

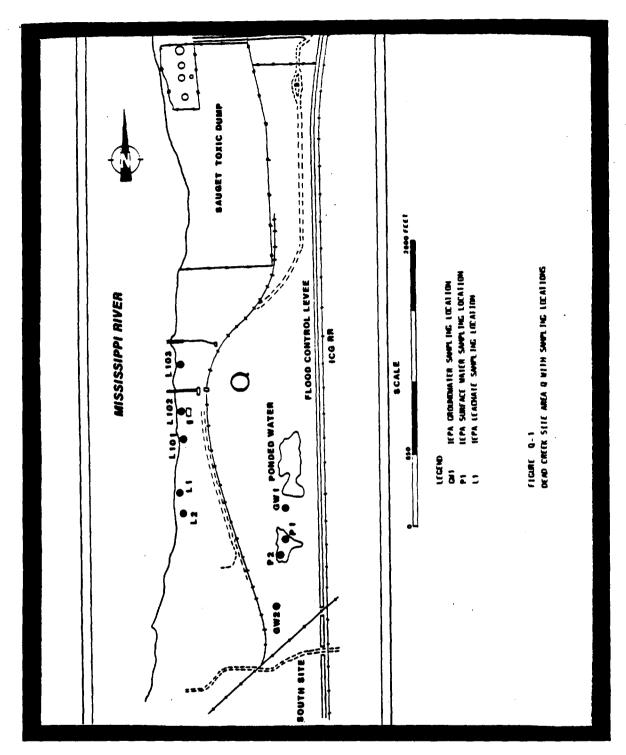
The site, also known as the Sauget and Company Landfill is an active site occupying a parcel of land approximately 90 acres in size located within the corporate limits of the villages of Sauget and Cahokia. The site is currently owned by Eagle-Marine Industries of St. Louis. The landfill was operated by Paul Sauget and Sauget and Company and then Browning-Ferris Industries between the years 1962 and 1975. The rectangularly-shaped landfill also includes a portion known as the southern extension, laying south of the intersection of the Alton and Southern Railroad and Illinois

Central Gulf Railroad tracks. It also includes a northern "dog-leg" portion, situated directly west of Site R.

Vehicular access to the site is controlled by Riverside and Pitzman Avenues along the north and access from the dirt road near the center of the site is currently blocked by concrete blocks placed at the site by Bauer Construction. The concrete was placed at the access point to keep unknown parties from disposing of waste at the site.

Much of the property is leased out to other private businesses. According to Mr. Richard Burke, representative of Eagle Marine, Peavey Grain operates a grain unloading and transfer facility at the rectangular portion of the site. River City Landscaping also operates on a parcel of land south of the Peavey operation. Another portion of the rectangular portion of the property is leased to Bauer Construction who separates metal bars from reinforced concrete.

Several features are apparent on the site and are described in the following paragraph. A borrow pit, approximately two acres in size, is located along the east-central portion of the property. Deteriorating drums were noted emerging from mounded areas within this borrow pit during the March 1994 ESI. Seeps have been noted in the past at various areas of the site. A four-inch diameter pipe, approximately 25 feet in length was located along the western edge



Source: IEPA, 1994. Base Map: Ecology and Environment, 1986.

FIGURE 2-7

## SITE Q - FEATURES

of the site. This pipe appeared to allow the direct disposal of liquid wastes into the Mississippi River. Samples taken from near the pipe in 1991 supports this belief. The pipe no longer exists. In the southern extension of the site, wetland areas are located in two borrow pits (according to the National Wetland Inventory maps). The borrow pits were created during the construction of the United Army Corps of Engineers' levee system. (approximately eleven acres) contains the remnants of drums and solidified wastes. The other borrow pit (approximately five acres) contains similar drums and solidified waste as the easternmost pit. The level of water in these pits is influenced by the level of the Mississippi River. When the river level is high, these pits are inundated with water. When the level of the river falls, the pits are devoid of water. During the flood of 1993, the entire expanse of Site Q was inundated by floodwaters, thus creating a direct release of contaminants into the river.

## 2.2.5 Site R

The site, also known as the Sauget Toxic/River's Edge Landfill is approximately 40 acres in size. It is located west of the U.S. Army Corps of Engineers flood control levee and is situated along the Mississippi River (Refer to Figure 2-8). The rectangularly-shaped landfill is bordered along the north by Union Electric's abandoned power plant (currently owned by Cahokia Marine Company), to the west by a 200 foot strip of property owned by Monsanto, separating

the landfill from the Mississippi River, to the south and east by Site Q, Trade Waste Incinerator and Clayton Chemical, and to the southeast by the American Bottoms Regional Treatment Plant.

The site is clay-capped and vegetated. The thickness of the cap varies from two to eight feet, according to boring logs. Drainage is directed to ditches around the perimeter of the site. The perimeter drainage trench located along the western boundary of the site is intersected by two additional trenches which divert stormwater to the Mississippi River. Concrete rip-rap extends from the riverbank along the western boundary of the site and extends from the site thirty feet into the Mississippi River. The site is surrounded by an eight-foot cyclone fence, which is under surveillance by the Monsanto Company, which also controls access to the site.

## 2.2.6 Site S

The site is situated approximately 100 feet west of Site O, within the corporate boundaries of the village of Sauget. Site S is approximately five acres in size and is located on property owned by the village of Sauget. The site is partially covered by the American Bottoms Regional Treatment Plant's asphalted parking area. Site S is bordered to the north by village property and Clayton Chemical, to the east by Site O, and to the west by the Trade Waste Incinerator, and the south by the ABRTP. The site is separated from Clayton Chemical and Trade Waste by fencing.

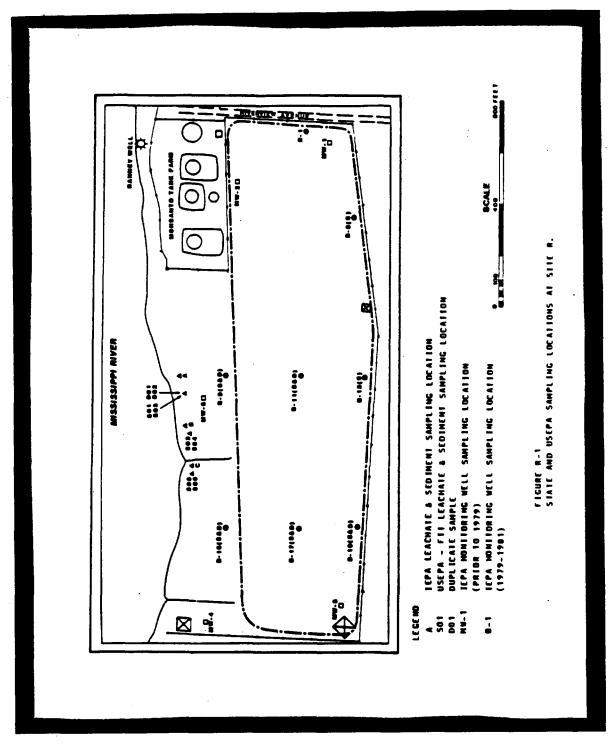


FIGURE 2-8

## SITE R - FEATURES

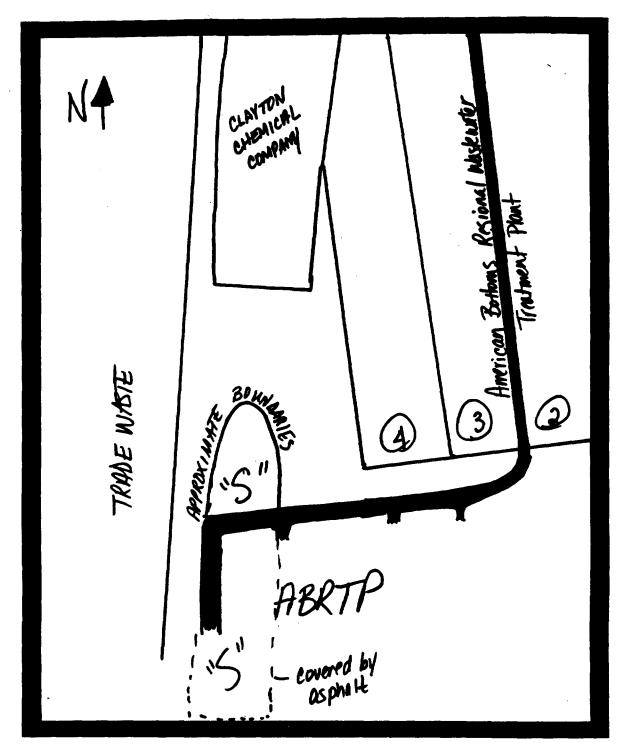


FIGURE 2-9

SITE S - FEATURES

Scale: 1:300

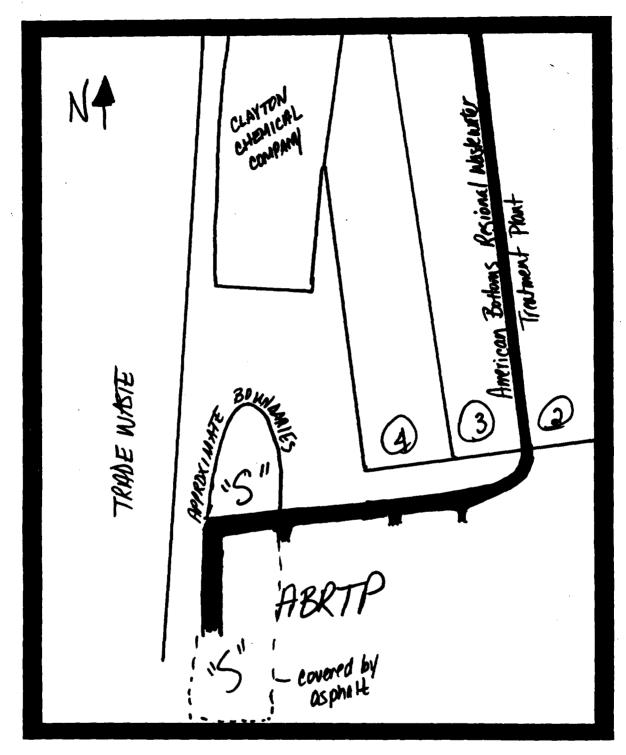


FIGURE 2-9

SITE S - FEATURES

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An aerial photograph from March 3, 1974 shows the site as a drum disposal area of unknown depth. In the photo, drums and standing liquid can be seen in the excavation. A dirt road leading from Clayton Chemical to the drum disposal area can also be seen on the aerial photo. Currently, no other official information is available concerning the site.

## 2.3 SITE HISTORIES

#### 2.3.1 Introduction

This portion of the ESI provides relatively brief, general, and regulatory histories of the activities which have taken place at the Sauget Area 2 Sites.

## 2.3.2 Site 0

The Sauget Treatment Plant has been in operation in some form since approximately 1966. The plant primarily treated effluent from area industries, but also provided treatment for the entire village of Sauget. Approximately ten million gallons per day (gpd) of waste water was treated at this facility, of which over 95 percent of the influent came from industrial sources. Area industries served by the village of Sauget Wastewater Treatment Plant include: Monsanto Chemical, Cerro Copper, Sterling Steel Foundry, Amax Zinc, Rogers Cartage, Edwin Cooper, and Midwest Rubber. Effluent from the treatment plant was directed to a National Pollutant Discharge Elimination System (NPDES) permitted discharge point in the

Mississippi River.

The treatment plant had a long history of NPDES permit violations, for the most part due to the chemical quality of the plant effluent. Mercury, PCBs, and organic solvents had been detected at concentrations exceeding the permit limits on several occasions. A USEPA study conducted in 1982 concluded that the treatment plant wastewater contributed a substantial volume of priority, toxic pollutants annually to the Mississippi River. Since operations began, the plant has undergone several modifications and upgrades, increasing both capacity and effluent quality. Currently, the plant is used for pretreating industrial waste before it enters the American Bottoms plant.

According to a Notification of Hazardous Waste Site Form submitted to USEPA in 1981, the former lagoons were used for disposal of clarifier sludges from 1965 to approximately 1978. The lagoons were not artificially lined, and were apparently excavated into the Henry Formation Sand. Initially, the sludge was not treated in any way after being placed in the lagoons. After an unknown period of time, lime was used for neutralization.

In 1982, IEPA personnel collected a sample of filter cake sludge from the treatment plant, which would provide an indication of the chemical quality of sludges placed in the lagoons over the years. Analysis of this sample showed several organic contaminants, including chlorinated benzenes, xylene, and aliphatic hydrocarbons, at concentrations ranging from 120 to 820 ppm. The lagoons are presently covered with approximately two fill of clay and have a vegetative cover.

Extensive construction/excavation has been done since 1981 in the area surrounding the former Sauget Treatment Plant. The new American Bottoms Regional Treatment Plant, completed in 1985, is located immediately south of the former sludge lagoons. Several involving chemical wastes were encountered during problems excavation work for the construction of this facility. In 1984, workers uncovered a black, tar-like substance with a strong solvent odor while digging a trench for sewer and water lines to the new treatment plant. Although file information is incomplete concerning the exact location of this incident, it is thought to be in the southern portion of lagoons three and four. Two samples of the waste material were collected by Envirodyne Engineers, Inc. (EEI) of St. Louis, and a limited organic analysis was run. Both samples showed the presence of PCBs (477 to 653 ppm), phenol (0.28 to 12.0 ppm), and oil and grease (29 to 35 percent). Benzene was also detected at trace levels (1 ppb) in both samples.

Several additional locations have reportedly been sampled by EEI as a result of uncovering waste materials during excavation activities around the Sauget Treatment Plant. However, attempts to gather information concerning specific sample locations and analytical

data have been of limited success. Chemical data for two soil samples collected from excavated soil piles in the area of the former sludge lagoons was acquired. These results are shown in Appendix F. Both samples show high levels of several chlorinated organics and other priority pollutants. Values were listed for total PCBs, however, the PCB results could not be verified by the laboratory. Although limited data had been acquired, it appears that the former sludge lagoon area likely contains widespread organic and inorganic contamination.

## 2.3.3 Site P

Sauget and Company entered into a lease agreement with the Union Electric Company in St. Louis to operate a waste disposal facility in 1972. In January 1973, IEPA issued an operating permit to Sauget and Company to accept only non-chemical waste from Monsanto. In 1974, Sauget and Company subsequently applied for, and was granted, a supplemental permit which allowed acceptance of general waste and diatomaceous earth filter cake from Edwin Cooper, Inc. (now Ethyl Corporation). Also at this time, the IEPA began conducting routine inspections of the facility, at which time no violations were evident. In October 1975, an inspector observed a small amount of yellowish, tar-like liquid in an area adjacent to several crushed fiber drums which were labelled "Monsanto ACL-85, Chlorine Composition." Sauget and Company and Monsanto were subsequently notified of this permit violation, and the matter was not further addressed. The site was operated in general compliance until

December 1977, when an inspection revealed the disposal of approximately 25 metal containers (12-15 gallon) full of phosphorus pentasulfide (P2S5), a flammable solid. Monsanto was required to excavate and remove all of this material from the site, and to discontinue disposal of any chemical wastes or packaging.

According to file information, the IEPA became aware of another potential problem at this time, specifically the use of a Southern Railway slag pile for intermediate and final cover material. Analysis of this slag showed it to be unsuitable for cover due to its high permeability and high heavy metal content. Cinders were also used as cover material at Site P, and are expected to pose the same problems as the slag; that is, increased surface water infiltration and the resulting potential for leaching heavy metals along with organic wastes into the groundwater.

State inspections in 1978 and 1979 indicated unpermitted disposal of Monsanto ACL filter residues and packaging. The composition of this material is not known. According to the site operator at that time, this material would occasionally ignite when in contact with the filter cake waste from Edwin Cooper.

The southern one-third of Site P was purchased from Illinois Central Gulf in 1971 by Paul Sauget. An Illinois-American Water Company distribution main was discovered in 1980 during preparatory excavation on the southern portion of the site. Following the

discovery of the water line, site plans and permits were modified to include no waste disposal within 100 feet of the line.

Review of available IEPA records indicate that the Edwin Cooper filter cake is the only industrial process that was reported to have been disposed of at Site P. Records indicate that approximately 117,000 cubic yards of this material was accepted. The filter cake was classified as non-hazardous on IEPA special waste authorization permit number #7400017, based on EP toxicity results submitted in 1973. Additional analytical data is available for a filter cake composite sample from Edwin Cooper in 1979 which indicates elevated levels of lead (18.4 ppm), cadmium (1.8 ppm), zinc (7220 ppm), and a pH of 11.22. No groundwater monitoring program has been established for Site P, nor have wastes at the site been adequately characterized. No sampling or other field investigation activities have been conducted, other than routine IEPA inspections, at the site.

During a June, 1991 CERCLA Screening Site Inspection, IEPA noted elevated levels of volatile organic compounds around the perimeter of the landfill. This was noted with the use of an 11.7 eV photoionization detector.

A nightclub, P.T.s Showclub, was built on top of the landfill along the west-central portion of the site in the early 1980's. The nightclub is owned by a private trust group.

## 2.3.4 Site Q

According to the Sauget Expanded Site Investigation prepared by Ecology and Environment for the IEPA in 1988, disposal operations began at Site Q in approximately 1962. Union Electric Company operated a flyash pond the site in an area immediately south of Monsanto's chemical dump (Site R). IEPA inspections in the early 1970's documented several violations of the Illinois Environmental Protection Act, including open burning, use of unsuitable cover materials (cinders and flyash), and acceptance of liquid chemical wastes. Septic tank pumpings were also accepted at the site from approximately 1968 to 1972, and were apparently co-disposed of with general municipal refuse.

In April 1971, a complaint was filed by IEPA against Sauget and Company (the landfill operator) for the violations listed above. The company was ordered to cease and desist open burning, accepting liquid chemical wastes, open dumping, and using cinders and flyash as cover material. In July 1972, a smoldering underground fire was observed by IEPA inspectors at the site. The fire continued to smolder until October 1972 despite repeated attempts to extinguish it. Underground fires were a continuing problem, as documented by later IEPA inspection reports. In the spring of 1973, flood waters from the Mississippi River inundated Site Q. This condition persisted into the fall, and operations at the site were discontinued. Exposed refuse was observed being carried downstream in the river at that time.

Sauget and Company filed a permit application to IEPA in 1972 for a proposed extension to the existing landfill. The proposed extension was located south of the Alton and Southern railroad tracks, and will be referred to as the southern extension. IEPA denied issuance of a permit for this extension several times, as Sauget and Company had filed repeated applications. Although approval of the southern extension was never issued, disposal operations continued in this area.

In the early 1970's, IEPA collected several samples from Site Q. Approximate sample locations are shown in Figure Q-1. Analytical data for samples collected from ponded water, leachate seeps, and groundwater are provided in Appendix F. The first set of samples, collected in October 1972, consisted of one sample from ponded water and one leachate sample. Results of these samples showed the presence of elevated levels of several metals; including copper, iron, lead, mercury, and zinc. Groundwater samples were collected in January 1973 from two monitoring wells at Site Q. Sample GW-1 showed trace levels of cadmium, silver, and phenols; while GW-2 showed very little evidence of contamination. Samples were again taken by the IEPA from ponded water at Site Q on two occasions in April 1973. Analytical results revealed low levels of boron, cadmium, copper, iron, lead, manganese, mercury, nickel, and zinc in sample P-2 and/or P-3. Although the data from samples collected in the early 1970's showed the presence of several contaminants, most notably phenol and heavy metals, no conclusive evidence of

contamination at Site Q was obtained.

IEPA collected samples from leachate seeps along the Mississippi River in October 1981 and again in September 1983. These locations may be found in Appendix F. Data for the 1981 samples revealed the presence of several metals as well as PCBs and phenols. September 1983 samples showed similar results.

The cinders and flyash used as cover materials at Site Q have been the subject of numerous investigations and complaints by the IEPA. In addition, the depth of final cover has been deemed inadequate. Illinois Pollution Control Board Case Number 77-84 was filed against Sauget and Company and Paul Sauget in May 1977. As a result of the findings in this case, a monetary penalty was invoked, and Sauget and Company was ordered to place two feet of suitable cover material on the entire site by February 1981. Sauget's failure to comply with these orders led the Illinois Attorney General's office to file a similar case. Site Q had been a chronic enforcement problem and Paul Sauget was found in contempt of court for failure to comply with court orders.

Laboratory tests run on the cinders and flyash indicate permeability values in the range of 9x10 -3 centimeters per second, which is considered unsuitable by IEPA. Recent flooding has also caused erosion of some of this material, thereby exposing new waste materials. In addition, metals analysis of the cover material

showed unacceptably high levels of arsenic, copper, lead, and zinc. In 1972, IEPA collected samples from stockpiled flyash at Site Q, and ran leach tests for inorganic constituents.

IEPA's Notices of Violations concerning disposal of chemical wastes at Site Q in early inspections are supported by more recent information. Notification of Hazardous Waste Site Forms were submitted to USEPA from three companies for this site: Browning-Ferris Industries, Clayton Chemical (as agent for Paul Sauget), and Pillsbury Company. These notices indicate disposal of organics, inorganics, solvents, pesticides, paint sludge, and unknown wastes at the site. In May 1980, workers uncovered buried drums and unknown wastes while excavating for construction of a railroad spur on the property. Workers observed a haze or smoke rising from the material after it was uncovered, suggesting corrosive and/or reactive properties.

As a result of the May 1980 incident, USEPA asked its FIT contractor (Ecology and Environment, Inc.) to perform a detailed study to determine the extent of chemical contamination at Site Q. The study included a systematic geophysical investigation using EM (electromagnetometry), and ground penetrating radar (GPR), followed by a drilling and sampling program to investigate possible subsurface contamination. The investigation was limited to the northern portion of the site which amounts to approximately 25 percent of the area.

Technos, Incorporated of Miami, Florida was contracted to perform the geophysical investigation. This investigation was completed in June 1983. Results of the geophysical investigation identified the probable limits of landfilling and burial zones of relatively large concentrations of iron bearing materials such as drums or car bodies. These iron bearing zones were found in several distinct locations in the north-central and western portions of the study area.

Following the geophysical investigation, a drilling/sampling program was conducted to determine if subsurface soils were contaminated. The program consisted of drilling 18 test borings through the landfill, and the collection of 35 soil samples for full priority pollutant analysis, as designated by USEPA. Subsurface soil samples were collected at depths ranging from 10 to 26 feet. A wide variety of organic compounds were detected at high concentrations in these samples. The samples were run for 112 organic compounds and 63 compounds were confirmed to be present in the subsurface samples. Compounds detected at 1000 ppb or greater include 2,4-dichlorophenol, 1,2,4-trichlorobenzene, dichlorobenzene, bis(2-ethylhexyl)phthalate, toluene, o-xylene, and Also, 2,3,7,8-tetrachlorodibenzo(p)dioxin was Arochlor 1260. detected in two of the borings. Compounds detected in samples taken from Site Q included many of the compounds detected in samples taken from Site R. Contamination was detected across the entire investigated, which suggested that disposal large

quantities of chemical wastes occurred specifically in the northern portion of Site Q and probably over the entire site area.

In November 1985, IEPA received a sketch from a reporter for a St. Louis newspaper indicating the location of buried drums containing PCBs. The reporter's source of this information is not known, nor has the information been verified.

In August 1993, the Agency received a call from Explorer Pipeline of Tulsa, Oklahoma. They had flown over the flood-inundated Site Q and noticed that an oil sheen appeared on the river in the approximate location of one of their pipes. The pipe is entrenched at a depth of approximately four feet and lays at the southern point of the intersection of the Alton Southern railroad track and the Illinois Terminal Railroad Association track.

Explorer waited until the river receded before excavating to see if their pipe was leaking. Explorer began the operation in the middle of August. Upon excavating around their pipe, they noted that the coating in one area of the pipe had been eroded away. A seam of a greenish-yellow substance appeared in the soil surrounding that section of the pipe.

Based on this information, representatives of the IEPA conducted a site visit. Observing the area in question, IEPA decided that the substance in the excavation should be sampled.

Sampling at the excavation occurred on September 2, 1993. Sampling was performed by representatives of IEPA's Pre-Remedial Unit. A total of three surface water samples were taken; two samples from the excavation (with one used as a duplicate) and one from a flooded area to the south of the excavation, near a concrete culvert (Refer to Figure 2-10 for sampling locations). In addition, three soil samples were taken as well: one sample from the excavation, one leachate from along the Mississippi River, and one from an area of discolored or stained soil. The excavation remains open, surrounded with warning tape.

Analysis of the samples revealed the presence of volatiles, semi-volatiles, pesticides, PCBs, and metals. Please refer to Appendix F for a sample summary.

During the March, 1994 ESI, the sampling team discovered a number of drums located along the riverbank. These drums have been sampled by both the Illinois EPA as well as the USEPA's Immediate Removal Team. High levels of PCBs were detected in the samples and plans are underway for these drums and affected soils to be removed.

### 2.3.5 Site R

Site R, also known as Sauget Toxic or River's Edge Landfill operated from 1957 until 1975. The landfill was operated by Sauget and Company and Industrial Salvage and Disposal under contract with Monsanto. According to information provided by the Eckhardt report

of 1979, Monsanto reported the disposal (for the year in question) of 262,500 tons of liquid and solid industrial wastes in the landfill from the Monsanto W.G. Krummrich Plant in Sauget and the J.F. Queeny Plant in St. Louis, Missouri. The W.G. Krummrich Plant listed the disposal of approximately 290,000 cubic yards of organics, inorganics, solvents, pesticides, and heavy metals. The J.F. Queeny Plant listed 6600 cubic yards of the same wastes. Information provided also listed the underground disposal of drums.

Disposal operations began in the northern portion of the site and as additional area was required, disposal activities were expanded toward the southern boundary of the landfill. Drilling logs indicate that the areas of waste disposal were covered or filled with flyash, cinders, sand and gravel.

In 1979, the landfill was covered with a clay cap and, according to drilling records, varies in thickness from a minimum of two feet to as much as eight feet thick.

In August, 1968, the Illinois Department of Public Health collected five groundwater samples from on-site monitoring wells. Phenols were detected in all wells at concentrations ranging from 15 to 1220 parts per billion. Alkalinity and total solids were analyzed for, but no significant conclusions could be made from the data for said parameters.

IEPA began making routine inspections at Site R in 1971. Photographs of the site at this time suggest that wastes were disposed of in direct contact with groundwater. No segregation of liquid wastes was apparent in these photographs. IEPA collected a number of samples from the monitoring wells in December, 1972. Analytical results of the samples indicate concentrations of iron, zinc, and phenol above the State's water quality standards. Oil was also detected in two wells.

In 1973, IEPA sent notices to Sauget and Company and Monsanto outlining violations of the Environmental Protection Act at Site R. Violations noted included inadequate segregation of wastes, open dumping of chemical wastes, and operation of a disposal facility without the necessary permits. In addition, it was noted that the cinders being used for cover material was not in accordance with the Rules and Regulations set forth by the Illinois Pollution Control Board. These violations were repeated several times in 1973 and 1974.

IEPA monthly inspection reports from 1975 indicate a significant reduction in the volume of chemical waste disposal at Site R. Wastes were being shipped to other unreported locations for disposal or were being incinerated at Monsanto's Krummrich Plant. Monsanto voluntarily ceased disposal operations at the site in 1977 and began closure proceedings. D'Appolonia Consulting Engineers, Incorporated was contracted by Monsanto to conduct a subsurface

investigation of the site. Twenty soil borings were drilled and eight monitoring wells were installed. The D'Appolonia study concluded that the landfill area consisted of five to twenty feet of flyash, cinders, silty clay, and unidentified waste. The landfill is underlain by alluvium, to 50 feet. Field permeability tests showed that silty sand is the major component of the alluvium. This finding is supported by the evidence of vertical migration of contaminants to a depth of 65 feet, as suggested in the boring logs. Water levels were generally 25 to 30 feet below surface.

In May, 1978, Monsanto filed closure documents to IEPA detailing a closure plan for the site. In general, the plan consisted of specifications for the installation of a drainage system and clay cap, along with details for grading, seeding, and access restriction. The Helmkamp Construction Company was retained to implement the closure plan. An IEPA inspection report from October, 1979 indicated that closure operations at Site R were complete, including installation of a clay cap three to six feet in thickness. In February, 1980, Richard Sinise, an Environmental Control Engineer for Monsanto, filed an Affidavit of Closure for Site R.

IEPA personnel sampled the wells installed by D'Appolonia in October, 1979. Analysis showed the presence of several organic contaminants in the wells, including: chlorotoluene, phenol,

chlorophenol, dichlorobenzene, and diphenyl ether. Some contaminants were detected at levels ranging from 0.81 to 2.1 ppm. Iron, copper, and zinc exceeded water quality standards in several wells.

In October, 1981, IEPA collected leachate and sediment samples at Site R from an area adjacent to the Mississippi River. Leachate and sediment samples were collected from three locations where leachate seeps were observed flowing from the landfill into the river. PCBs and chloroaniline were detected in all sediment samples. Other in compounds detected sediment samples included 2,4-(2,4-D), chloronitrobenzene, dichlorophenoxyacetic acid dichloroaniline, chlorophenol, and dichlorophenol. The presence of 2,4-D and chlorinated phenols in these samples suggested that dioxin was also a potential contaminant at the site. The IEPA subsequently requested assistance from USEPA in securing laboratory to perform dioxin analysis on leachate samples from Site R. In November, 1981 a USEPA contractor (Ecology and Environment, Inc.) collected leachate and sediment samples at three locations adjacent to the river. A total of eight samples plus three blanks were collected. Dioxin analysis was performed by the Brehm Laboratory at Wright State University. Monsanto obtained split samples and analyzed for chlorinated dibenzo-p-dioxins (CDDs), select organics, and metals. The USEPA samples were analyzed for tetra through octa CDDs and dibenzofurans (CDFs), select organics, and metals. The results revealed the presence of higher chlorinated

dioxins and furans (hexa through octa isomers) in three of the five samples sent in for analysis.

Inorganic data for the leachate and sediment samples did not show significant inorganic contamination, however, concentrations of chromium, copper, boron, and iron exceeded water quality standards in two or more samples. Elevated levels of arsenic, chromium, copper, lead, and barium were found in several samples.

In 1982, the Illinois Attorney General's office filed suit (Complaint number 82-CH-185) against Monsanto outlining several apparent violations of the Illinois Environmental Protection Act. For the most part, the complaint was directed at alleged water pollution caused by the defendant. Relief requested by the Attorney General included civil penalties and issuance of an injunction directing the defendant to immediately prevent the seepage of wastes into the Mississippi River, and to remove all such wastes from the property. To date, no information has been located concerning a determination in this case.

Monsanto has hired Geraghty and Miller, Environmental Consultant, St. Louis, Missouri, to perform a Remedial Investigation - Feasibility Study as part of the consent order with the state of Illinois.

USEPA file information suggest that fish studies have been

conducted in the Mississippi River in the vicinity of Site R. The Food and Drug Administration (FDA) in Edwardsville, Illinois has found unacceptable concentrations of PCBs in fish collected downstream of Site R. A detailed study was proposed for the area in the immediate vicinity of the site, however, attempts to convince Monsanto to perform study have been unsuccessful to date. Monsanto believes the problem to be further complicated by the existence of the American Bottoms outfall, and will not conduct fish tissue sampling, as the American Bottoms outfall is located immediately northwest of Site R.

## 2.2.6 Site S

There is currently no file information available for this site, which was discovered through the use of historical aerial photographs provided to this agency by the Illinois Department of Transportation.

A study of the 1974 aerial photograph (Located in Appendix C) revealed the presence of approximately 200 drums in or around the disposal area. A road leading from Clayton Chemical can be noted in the photo.

### SECTION 3

### SITE INSPECTION ACTIVITIES AND ANALYTICAL RESULTS

### 3.1 INTRODUCTION

This section outlines procedures utilized and observations made during the CERCLA Expanded Site Inspection conducted at the Sauget Area 2 sites in Sauget, Illinois on March 16 and 17, 1994. Specific portions of this section contain information pertaining to the reconnaissance inspection and sampling procedures. This section also details the analytical results with particular emphasis upon the key samples.

The Expanded Site Inspection for the Sauget Area 2 Sites was conducted in accordance with the site inspection workplan which was developed and submitted to the USEPA Region V offices prior to the initiation of sampling activities.

## 3.2 RECONNAISSANCE INSPECTION

Several reconnaissance inspections of the Sauget Area 2 Sites have taken place throughout the past year in order to be sure that the area was looked at thoroughly, due to the size of the area in question. Sampling had initially been planned for the fall of 1993. However, due to the flooding of the area during the summer of 1993, this action was postponed until the waters receded.

## 3.3 SOIL/SEDIMENT/WASTE SAMPLING

On March 16 and 17, 1994, a total of sixteen soil/sediment/waste samples were collected during the CERCLA Expanded Site Inspection at the Sauget Area 2 sites (See Figure 3-1 for sampling locations). All samples were collected using stainless steel hand augers and/or hand shovels, with the exception of sample X101, which was obtained with the use of the Agency drill rig. The soil/sediment/waste was transferred directly from the hand tool and placed directly into the sampling jars, with the exception of the duplicate samples, which were mixed and then placed directly from the mixing pan into the jars.

Standard Illinois EPA decontamination procedures were followed prior to the collection of all samples. The procedures included the scrubbing of all equipment (hand shovels, buckets, augers, etc.) with non-foaming Alconox solution, rinsing with hot tap water, rinsing with acetone, rinsing with hot tap water again, and final rinsed with distilled water. All equipment was then air dried, wrapped and stored in heavy duty aluminum foil for transport to the field. Field decontamination procedures included rinsing the equipment with distilled water.

Sample X101 was taken in order to characterize the wastes in the landfill. Analytical results revealed the presence of volatiles, semi-volatiles, pesticides, PCBs, and metals. The sample was taken with the use of the Agency drill rig and the boring was

approximately 10.7-13 feet in depth.

Samples X102, X103, and X104 were taken in the wetland area along the western boundary of Site P. The samples were taken in order to characterize contamination in the wetland. The samples were taken approximately 300 feet apart in order to show contamination in a one-tenth of a mile length for HRS purposes.

Analytical results revealed the presence of semi-volatiles, PCBs, pesticides, and metals within the top two feet of soil.

Samples X105 and X106 were taken at Site O in order to characterize the waste in the lagoons. Analytical results revealed the presence of volatiles, semi-volatiles, pesticides, PCBs, and metals.

Samples X107-X109 were taken in the borrow pits at the southern end of Site Q. They were taken in order to further characterize the waste in the pits. The samples were taken at the surface and approximately 300 feet apart in order to show contamination in a tenth of a mile wetland frontage for HRS purposes.

Analytical results revealed the presence of semi-volatiles, pesticides, PCBs, and metals.

Samples X110-X112 were taken as surface samples at Site Q (within the top two feet) in order to characterize the wastes at the site.

The site was inundated with floodwaters during the summer of 1993.

Analytical results revealed the presence of volatiles, semi-volatiles, pesticides, PCBs, and metals.

Samples X501 and X502 were waste samples taken from two separate drums located at Site Q. These samples were taken in order to characterize the waste in the drums.

## 3.4 ANALYTICAL RESULTS

Chemical analysis of the sixteen samples collected during the inspection revealed the presence of elevated concentrations of the following: volatiles, semi-volatiles, pesticides, metals, suspected laboratory artifacts, and common inorganic soil constituents. Table 3-3 in Appendix D provides a summary of analytical results. Complete analytic results can be found in Volume II of this report.

## 3.5 KEY SAMPLES

Table 3-2 identifies those samples taken during the CERCLA Expanded Site Inspection which were shown to contain contaminants at significant levels.



Source: IEPA, 1994. Base Map: Illinois Department of Transportation, 1974.

Figure 3-1 Scale 1;1800 1994 ESI SAMPLE LOCATION MAP

CERCLA Expanded Sits Inspection - Sauget Area 2

		TABLE 3-1	
SAMPLE	DESCRIPTION	LOCATION	DEPTH
X101	BLACK AND SLUDGE-LIKE WITH DEBRIS. FINE-GRAINED SILT WITH ODOR.	SITE P. LOCATED APPROXIMATELY 90 FEET WEST OF POWER POLE A AND 14 FEET NORTH OF NORTH OF POWER POLE A.	10.7-13 FEET
X102	BLACK, SANDY WITH CLAY.	WETLAND AREA ALONG WESTERN BOUNDARY OF SITE P. 202 FT WEST OF POWER TOWER A AND 130 FEET EAST OF RAILROAD TRACKS ALONG WESTERN BOUNDARY.	1-5 INCHES
X103	BLACK, COARSE-GRAINED SAND 0-4" THEN SILTY.	LOCATED 350 FEET SOUTH OF SAMPLE APPROXIMATELY 30 FEET WEST OF LANDFILL EMBANKMENT.	0-5 INCHES
X104	BLACK, SILTY, FINE-GRAINED.	LOCATED DIRECTLY WEST OF P.T.S SHOWCLUB, APPROXIMATELY 15 FEET WEST OF EMBANKMENT.	0-4 INCHES
X105	BLACK, CLAY-LIKE MATERIAL, MIXED WITH A RUBBERY SUBSTANCE.	LOCATED 259 FEET EAST OF ACCESS ROAD AND 430 FEET SOUTH OF NORTHERN PORTION OF ACCESS ROAD.	6-7 FFET
X106	BLACK, WITH SILTY CLAY. BLACK SUBSTANCE WAS CINDER-LIKE.	LOCATED APPROXIMATELY 173 FEET WEST OF ACCESS ROAD AND 264 FEET NORTH OF SOUTHERN PORTION OF ACCESS ROAD.	2 FEET
X107	DARK BROWN TO BLACK, SILTY AND MOIST.	LOCATED AT SOUTHEASTERN-MOST PART OF BORROW PIT.	4-6 INCHES
X108	BLACK, SILTY AND SANDY WITH ORGANIC MATERIAL.	LOCATED 300 FEET WEST OF X107.	5-8 INCHES
X109	DARK BROWN TO BLACK AND THEN SANDY WITH SOME CLAY.	LOCATED 300 FEET NORTH OF SAMPLE X107.	3-4 INCHES
X110	A LAYER OF BLACK, SILTY , SANDY MATERIAL WITH CINDERS WITH A PASTY, YELLOWISH SUBSTANCE.	LOCATED 213 FEET NORTH-NORTHEAST OF POWER TOWER B.	2-8 FEET
X111	BLACK, TAR-LIKE.	LOCATED APPROXIMATELY 5 FEET TO THE WEST OF X110.	1/4-1 INCH
X112	BLACK ON TOP; RUBBERY, WITH PURPLISH "GOO" FLOWING TO THE SURFACE. UNDER THIS LAYER WAS A BROWNISH-RED WITH YELLOW RUBBERY SUBSTANCE.	LOCATED 125 FEET EAST OF SITE R FENCE AND 24 FEET SOUTH OF RIVERSIDE ROAD.	0~3 INCHES
X113 X114	DARK-BROWN, SILTY, FINE.	LOCATED 62.5 FEET SOUTHEAST OF POWER TOWER C	2-4 INCHES
X501	ORANGE AND PURPLE CRYSTALLINE MATERIAL.	TAKEN FROM DRUM LOCATED IN LOW AREA NEXT TO SITE Q EXCAVATION — SEVENTY—SEVEN FEET, SEVEN INCHES SOUTH—SOUTHEAST OF TELEPHONE POLE NORTHEAST OF INTERSECTION OF ACCESS ROAD AND ALTON AND SOUTHERN RAILROAD TRACKS.	
X502	BLACK, CINDER-LIKE MATERIAL.	TAKEN FROM DRUM LOCATED ALONG MISSISSIPPI RIVER RIVERBANK.	

Bee CERCUS			Site P		_	<b>6</b> 0
AMPLING POINT	X101	X102	X100	X104	X105	X106
RAMETER	soli	edi	şali	ecif	act.	Nos
ATILES			,			<b>.</b>
isthylana Chiorida		4.6.)	<b>151</b>	ne ne		L 4.000
cetone arbon Disultide	73.0 16.0	97.0	Las	look at again		
1Dichlaroethene		160.0			******************************	
2 - Dichlorcethans (total) Noroform	403	82.0			\$300.6J	
-Butanone 1,1,1 - Trichtoroethane	27.0 4.0 J	9.0 <i>J</i> 130.0			12000.0	
ichicroethene 12 - Trichicroethene	LOP	11#J			8700.0 3	
enzenit - Methyl - 2 - Pentanone	94.0			480000 0 GJ	\$0000.0	Lagre
- Helenone	140.0				3000.0 J	
etrachicroethene pluene	110.0			2800000 DJ	30000 J	Laore
higrobenzene Hylbenzene	42.0 50.0			460000.0 DJ 22000000 D		15000.0 3900.0 J
lyrene ylene (kotel)	200.0			PROCOCOD D		4000.0
	***************************************					
ug/kg II -VOLATILES		<u> </u>				
henal - Chlorophenal		•				41000.0 J 24000.0 J
3-Dichlorobenzene 4-Dichlorobenzene	4200.0 J 1300000.0	1300 J			330000.0	#00000.0 1700000.0 J
2-Dichlorobenzane	120006.0 J	144.7			820000.0	1500000.b J
- Methylphenol ophorone		<u> </u>		2900.0		
- Nitrophenol 4 - Dichlorophenol					0.00000	120000.0 250000.0
2,4 - Trichlorobenzene spihalene					140000.0 J 180000.0 J	55000.0 J 55000.0 J
- Methylnephthelene 4,5 - Trichlorophenol				640.0 J	580000.0	130000.6
- Nitoeniline						180000.0J
vorene 4,5-Trichlorophenal		310.0 J			R2000.B J	
entechlorophenol henenthrene		1600 J	570.0 J		19000000	340000,5J
-n-Butylphthelate ugranthens	Seodo J	5000 BJ	10000 BJ L 0,088	940.0 GJ 2400.0 J	95000.0 J	1
rrene utylbenzylp hthelate			7200)	1700.0.1	940000.0 63000.0 J	
anzo(a)Antivacene		140.0 J		t 0.001	400009.0	12000000.0
hrysene s(2-Ethylhexyl)Phthalate		140.0 J	L 0.009	2200.0 J 920.0 J	870000.0	
enzo(b) Ruoranthene enzo(k) Ruoranthene	4, 655; 29 55554 existences approved	180.0 J 180.0 J	720.0 J 830.0 J	3900.0 1900.0 J	160000.0 J	
enzo(a)Pyrene deno(1,23 - od)Pyrene		140øJ	Laper	1600.0 J 2600.0 J	160000.0 J	1
benz(s,h)Anthracene					100000.0 J	***************************************
enzo(g,h,i) Perylene ug/Kg TICIDES			520.0 J	2000.0 J		
pha-BHC	nna na mbadadh 2020 <b>000 casa</b> dh					
rts-BHC	And Air A Charles I representation access	15,08P	160.0 8	5.6 P		25000.0 UX
emma - BHC (Lindane)	1 - The contract of the contract	3.0 P		9,7 P	170000.0 UX	25000.0 UX
4'-DDE	32.0 P	37.0 P				
ndrin 4'-DDD		28.0 P	26.0 P	46.0 P	330000.0 UX	
ndoouten sullate 4'-DDT		32.0BP	40.0 BP	1400 BP	\$50000.0UX	48000.0 UX
ethoxychiar ndrin Ketone	180.0 P 52.0				330000,0UX	48000.0 UX
pha-Chiodane smma-Chiordane	\$2.0BP	10.0 P	36.0 P			
exaphene	1 - 34048.52.5408.525					25000.0 UX
ocior - 1242 ocior - 1254		560.0 \$100.0	1500.0 3400.0	1700.0 3600.0	2900000.0 C 930000.0 PC	170000.0 C 100000.0 C
ug/Kg	570.0 B	1400.0 B	4000.0 B	4600.0 BC	530000.0 BC	95000.0 BC
IGANICS	<del></del>	<del></del>				<del>                                     </del>
uminum vimony	12100.0	6650.6	19200.0	10400,0	2450.0 61.2	8470.0
senio rium	14.2 228.0	\$4.7 74.8	27.6 181.0	14.2 180.0	120.2 1010.0	16.0 300.0
nyllum (1995), projekt (1995),	0.78 3.0	8.1 5.6	9.7 15.3	1.4 B 32.9	2370.0	0.58
actum	34405.0	22800,0	40200.0	95400.0	8950.0	11.9 51800.0
nomium sbak	50.6 8.1 B	27.7 36.8	36.5 21.6	30.2 37.7	192.0 24.3	34.6 8.68
opper Militaria	33.2 87600.0	95.2 18960.0	197.0 \$ <b>79</b> 00.0	231.0 \$8740.6	9160.0 42100.0	332.0 )4400.0
ad ng neglum	217.0 1 180.0	130.0 #000.0	332 <i>0</i> 84600	378.0 9840.0	7180.0 1890.0	99.4 \$430.0
engénese eroury	84.2 8.6	192.0 1.0	200,0	0.096	1360.0	250.0
ckel	24.6	105.0	3;4 65.6	8.A 48.8	1994.0 125.0	34.4 01.7
Marium Marium	4840.0 17.0	19100B 6.7	2170.0 5.6	1860.0 3.4	786.6 S 108.0	960.5 2.3
lver ockum	3290.0	563.0 B	1.21 E 202.0 B	2/4 B 206.0 B	30.8 427.0 B	1.7 B 1940 B
rellium nnedium	5.0 43.9	1,98 44.0	\$.0 50.3	0.4 B 50.2	#.# 50.0	25.3
ns yenide	19100 2.6	<b>986</b> .0	1000.0	4000.0	90400.0 8.8	994.0

See CERCUS				Site C	1				Drums at	Site Q
SAMPLING POINT	X107	X106	X108	X110	XIII	XIII	X118	X114	X501	X502
PARAMETER	eat	acil .	· sof	sof	acif	acit	sol .	soll	drum waste	drum wests
NATILES		ł	1		ļ		<u> </u>	ļ	1	
Mothylana Chicrida			*.0.1	La.	1100.63	7.083		103	15.08	14.06
Acetone Carbon Disultie				110.0		130.0			29.0	11.0
1,1-Dichloroethene 1.2-Dichloroethene (lotal)										
Chloroform 2—Butterons				200.0		10.0			7.0 J	12.0
1,1,1 - Trichloroethens Trichloroethens						3.0J				3.0 J
1,12-Trichioroethene			4.000.000.000.000.000	4.03						000000000000000000000000000000000000000
Benzene 4 – Methyl – 2 – Pentanone 2 – Herenonie			****************	******************************			1			000000000000000000000000000000000000000
Tetrachiorcethene						101	***************		#	
Toluene Chlorobenzene				3.0 J			¥		LOS	4.0.J
Ethysbenzene Styrene				•				f	3.0 J	
Xylane (total)				203		ta.e	<b>‡</b>		\$20.0	(1888) <b>19</b> 88 (1886)
MI~VOLATILES	<del> </del>	<del> </del>	ļ	<u> </u>	<del> </del>	ļ. —. — —			ļ	ļ — — —
Phenoi										
z – Chlorophenol 1,3 – Dichlorobenzene					tees which	<b>!</b>	<b></b>		<b>.</b>	
,4-Dichtorobenzene ,2-Dichtorobenzene	ļ		ļ	<b>.</b>	date?	high detect	<b>!</b>	<b>4</b>	<b>.</b>	
l – Methylphenal sopharans	1	340.0 J						1		tagh detect
2 – Nitrophenol 2.4 – Dichlorophenol										values
1,2,4-Trichlorobenzene		1			*****************			# 000000000000000000000000000000000000	000000000000000000000000000000000000000	
Napshalena 2 – Methyl naphthalene	1 1000 1000 1000	120.0 J					*************		1	
2,4,5 - Trichtgrophenol 2 - Nitoeniline										
Rugrene 2,4,5 – Trichlorophenol	1					•		1		1
Pentachlorophenol Phenanthyene		10053				1	170.0 J	<b>]</b>		
X-s-Bug/phthalate Rugranthene	9100 B	1200.0 B	82008				1200.0 S	1900.0 S	8600 B	\$60,600,000
Pytene Sutylbenzylphthelata	580.0 U	100.0 J					34001	3000 1		
Benzo(s)Anthrecene	L 0.014	99.0J					84004	230ā J		<b>1</b>
Chrysene pis(2-Ethylhexyl)Phthalate	290.0 J	2000.0					230.0 J	1900 J		
Benzo(b) Fluoranthene Benzo(k) Fluoranthene	410.0 J						3400 J 1300 J	220.0 J 180.0 J		
Benzo(s)Pyrene Indeno(1,2,3 - cd)Pyrene	19 TE LE JESSESSONNE.	19 000 P000000000					~ 280.0 J	210.0 J		100000000000000000000000000000000000000
Dibenz(a,h)Anttracene Benzo(g,h,)Parylene				500,000,000,000,000			270.0 J		900 1000 2 500 100 50 50	000000000000000000000000000000000000000
ug/Kg		Series introduceron condu	N00000 N0000 NN00000	an ann an an ann an ann an			47000			000000000000000000000000000000000000000
		L		•	<u></u>		1	1	1	1
alpha-8HC beta-8HC	1 503 19003 4 1 4 3	6.0000000000000000000000000000000000000		2.6 JP			1			
delts-BHC gamme-BHC (Undane)	4.5 BP	13,0 B.P		43.0B	46.Q BP	19000.0 UX	8.08P 0.4 JP	4.88P 1.2 JP		
Disidita 4,4'-DOE	TO STATE	380.0 ₱	10.0 P		74.0 P		23.0	25.0	0,5,3P	250000,0 U
Endrin 4,4'-000	27.0 P	69.0 P	47.0BP 2.6JP		28.0 P	36000.0 UX	17.0 P	14.0 P		
Endosultan sulfate 4,4'DDT	27.08P		1.8 JP		100000000000000000000000000000000000000	3300.000	•	<b>1</b> 000000000000000000000000000000000000	0.1 JP	490000.0 U
Methoxyotilor	1 to 1 to 1 to 1 to 1	82.0 BP	2.4 JP		64.0 BP	190000.0 UX	16.0BP	13.0 BP		222223
Endrin Ketone Ilipha - Chiodane	49.0 P	120.0 P 4800.0 UX	4.6 P		130.0 P	38000.0 UX			0.7 84	
gamme – Chlordane Toxaphene	44.0P	140.0 P	2.7 P	5600.0	15.0 P	330.0 P	8.0 P	8.4 P	9.4 JP	250000.0 U
Arodor – 1242 Arodor – 1254	1300.0 P 6200.0 C	(	110.0 \$70.0	22000	670.0 1800.0	80000.0 C	220.0 860.b	190.0		7400000 P
Araclar – 1260	7700.0 BC	17000.0 BC	450£	1700.0 B	2900.0 B	42000.0 BC	710.0 B	720.0 B	22.0 BJ	44000000.0 B
PIGANICS										
Numinune Antimony		15100.0	81100	1	9470.0	1900.0	19800.6	15600,0	195.0	228.0
Arsenia Barlum	5.1 196.0	4.7 263.0	2.5 B 72.0 B	1.08	323.0	3.\$ 134.0	₩.# 230.0	7.7 250.0	2.7 B	4.0 B
Berytium Cadmium	3.8	9.0 b	0.38		0.6 B	9,2 B 3.0	9.7 B 3.8	9.6 B 3.0		
Talcium Chromium	10100,0 31.2	7800.0 93.7	4170.6 7.9	90900.9 8.8	100000.0 19.2	12000.0 7.4	7700,0	7720.0	190.0 %	71800.0
Cobelt	9.6 B	9.7 B	5.28 5.08		6.0	2.7 57.8	21.2 7.28	22.5 6.4 B		6.5
	24400.0	21200.0	B050.0	18000	97.7 13100.6	41000	56.6 24500.0	56.1 25800.0	1.2 B 905.6	7.8 76100.0
.eed Hegneeluni	72.4 \$350.0	218.0 4809.9	12.1 2000.0	26.0 1200.0	132.0 9190.0	39.1 17 <b>9</b> 0.0	63.0 <b>200</b> 0.0	66.3 4300.0	25.5 89.7 B	11.5 007.0 B
langaness Isroury	287.0 0,1 B	253.0 0,1 B	94.7	30.9 0.2 B	162.0 4.9	104.0 D.B	283.0 0.8	278.0 0.2	7.3	50.6
Vickel Potensitum	32.0B 2840.0	33.9 B 2220.0	13.7 205.0 B	\$140 B	32.0 3500.0	12.3 267.0 B	27.0 2500.0	30.0 2520.0	3.6 8	17.8
Balanium Bilver	0.4 B	1.4 B 150.0 B	(1000000000000000000000000000000000000	1.9	1.9	0.3 8				
Bodium Thallium	163.0 8	158.0 8	99.58	1070.0 B	227.0 8	357.0 B	217.08	224.0 B	1150 B	L
inge um Vanadium	50.8	34.4	15.5	11.5	27.2	15.0	34.7	27.8	0.78	2.08
Zine	321.0	809.0	57.8	88.7	7900	3400	488.0	498.9		33.6

### SECTION 4

## IDENTIFICATION OF SOURCES

### 4.1 INTRODUCTION

This section discusses each of the hazardous waste sources which have been identified during the CERCLA Expanded Site Investigation of the Sauget Area 2 Sites. Section 1.1 of the revised Hazard Ranking System (HRS) defines a "source" as: "Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance." This does not include surface water sediments or surface water that has become contaminated. Information concerning the location, physical description, use, period of operation, size, and potential to affect the migration pathways along with analytical data obtained during the Expanded Site Inspection (ESI) is presented for each source.

## 4.2 SAUGET SITE O / SAUGET WASTEWATER TREATMENT PLANT LAGOONS

The former village of Sauget Wastewater Treatment Plant lagoons were used to dewater sludge from the treatment plant. The lagoons were in operation from 1967 until approximately 1980. Effluent from the various industries in the area ended up at the plant for treatment. The following is a list of those industries that discharged to the treatment plant from 1967 to 1980:

Clayton Chemical Company
Amax Zinc Company
Cerro Copper
Midwest Rubber Reclaiming
Mobil Oil Corporation
Monsanto
Wiese Planning and Engineering
Sterling Steel Foundry, Inc.
Rodgers Cartage
Ethyl Petroleum Additives/Edwin Cooper
Kerr-McGee/Moss American

The four lagoons are approximately twenty acres in size (total). Analytical results of samples taken during the ESI of March, 1994 revealed the presence of numerous compounds of concern, including the following:

## Volatiles:

Chlorobenzene	15000	ppb
1,1,1-Trichloroethane	12000	ppb

## Semi-volatiles:

1,3 Dichlorobenzene	20000	ppb
1,4 Dichlorobenzene	1700000	ppb
2-Nitrophenol	120000	ppb
2,4 - Dichlorophenol	250000	ppb
2,4,6 Trichlorophenol	130000	ppb
Pentachlorophenol	13000000	ppb
Benzo (a) pyrene	160000	ppb

## Pesticides/PCBs

Arochlor	(1242)	2900000	ppb
Arochlor	(1254)	100000	ppb
Arochlor	(1260)	530000	ppb

### Inorganics

Antimony	61.2	ppm	Mercury	1584 ppm
Arsenic	120.2	ppm	Nickel	125 ppm
Barium	1010	ppm	Selenium	108 ppm
Cadmium	2370	ppm	Silver	29.8 ppm
Chromium	192	ppm	Vanadium	58.6 ppm
Copper	9160	ppm	Zinc	60400 ppm
Lead	7180	ppm	Cyanide	6.6 ppm
Manganese	1360	mag	-	

Pathways of concern include surface water (groundwater to surface water flow) and the air migration pathway. Groundwater and soil exposure are not evaluated for this pathway due to the lack of targets.

## 4.3 SAUGET SITE P / P.T. S SHOWCLUB

The Illinois EPA permitted Site P was operated by Paul Sauget from 1972 until 1984. The landfill was permitted to accept non-chemical solid waste from Monsanto and Ethyl Corporation. The property was leased from Union Electric of St. Louis. The landfill is unlined, has no leachate collection system and is covered with cinders, ash, and slag from a Southern Railway slag pile.

In January, 1973, IEPA issued a permit for the landfill to accept diatomaceous earth filter cake from Edwin Cooper, Incorporated (now Ethyl Corporation).

Although the landfill was permitted to accept only non-chemical waste, several violations of the permit were noted by the Collinsville Field Office. In October, 1975, an inspector noted a

yellowish tar-like liquid in an area adjacent to several crushed fiber drums which were labelled "Monsanto ACL-85, Chlorine Composition." Sauget and Company and Monsanto were notified of this violation and the matter was not further addressed. In December, 1977, an inspection revealed the presence of approximately 25 metal containers (12-15 gallon) full of phosphorus pentasulfide (P2S5), a flammable solid. IEPA required Monsanto to excavate and remove all of this material from the site, and to discontinue disposal of any chemical wastes or packaging.

IEPA inspection of the landfill in 1978 and 1979 indicated non-permitted disposal of Monsanto ACL filter residues and packages. The composition of this material is not known. According to the site operator at that time, this material would occasionally ignite when it came into contact with the filter cake from Edwin Cooper.

Analytical results from the March 1994 CERCLA ESI revealed the presence of the following:

## <u>Volatiles:</u> (ppb)

Acetone -	73
Carbon Disulfide -	16
1,1-Dichloroethane -	160
1,1,1-Trichloroethane -	130
Tetrachloroethene -	140
Chlorobenzene -	42
BTEXs - (total)	420

# <u>Semi-Volatiles</u>: (ppb)

1,3-Dichlorobenzene -	4200
1,4-Dichlorobenzene -	1300000
1,2-Dichlorobenzene -	120000
2,4,5-Trichlorophenol -	310
Chrysene -	2200
Benzo(a) Pyrene -	1600

# Pesticides/PCBs (ppb)

4,4'DDE -	37 gamma-Chlordane	- 36
4,4'DDD -	46 Arochlor -	4600
4,4'DDT -	140 Endrin Ketone -	52

## Inorganics (ppm)

Arsenic -	34.7	Magnesium -	8460
Barium -	226	Manganese -	389
Cadmium -	32.9	Mercury -	5.6
Chromium -	60.6	Nickel -	105
Cobalt -	28.6	Zinc -	4030
Lead -	378	Cyanide -	2.6

Pathways of concern at this source include surface water (wetland), including groundwater to surface water, soil exposure and air. The groundwater pathway was not fully evaluated due to the lack of targets.

## 4.4 SAUGET SITE Q / SAUGET AND COMPANY LANDFILL

The unpermitted Sauget and Company landfill was operated by Paul Sauget from 1962 to 1975. The site is approximately 90 acres in size, including the southern extension, as delineated by the Alton and Southern Railroad. The site is located in the Mississippi River

floodplain; along the river's bank and on the west side of the U.S.

Army Corps of Engineers flood control levee and is situated immediately east of Site R.

The site is unlined, uncapped, has no system for leachate collection or run-on/run-off control, and is covered with cinders and flyash. The landfill served as a municipal landfill for the village of Sauget as well as an industrial landfill for the various industries in the St. Louis area.

Peavey Grain, River City Landscape Supply and Bauer Construction are currently operating at the site. They employ 25, 20, and one person respectively.

The landfill was inundated with waters from the Mississippi River during the flood of 1993 as well as the flood of 1973.

Analytical results from the March, 1994 CERCLA ESI revealed the presence of volatiles, semi-volatiles, PCBs, pesticides, and metals. Contaminants of concern include the following:

**Volatiles**: (ppb)

Methylene Chloride 1100

<u>Semi-Volatiles</u>: (ppb)

Phenanthrene 170
Benzo(a)Anthracene 410
Benzo(a)Pyrene 250

# Pesticides/PCBs: (ppb)

Dieldrin	380
4,4'DDD	69
4,4'DDE	74
4,4'DDT	82
Endrin ketone	130
gamma-Chlordane	330
Arochlor 1260 (soil)	42000
Arochlor 1260 (drum)	44000000

# Inorganics: (ppm)

Arsenic	8.8	Magnesium	9190
Barium	323	Manganese	287
Cadmium	13.1	Mercury	4.9
Chromium	93.7	Vanadium	50.8
Lead	218	Zinc	798

## 4.5 SAUGET SITE R / RIVER'S EDGE LANDFILL - SAUGET TOXIC

The Monsanto-owned chemical landfill was operated by Sauget and Company and Industrial Disposal from 1957 until 1975. The site is approximately 36 acres in size and is located along the banks of the Mississippi River on the west side of the Army Corps of Engineers flood control levee.

The site is capped with an engineered and maintained cover. Leachate collection systems exist along the sides of the landfill and access to the landfill is barred by an eight foot fence and security cameras.

Analytical results provided to the Agency by Geraghty and Miller, consultants for the Monsanto Company revealed the presence of volatiles, semi-volatiles, pesticides, PCBs, and metals.

pesticides, PCBs, and metals. Contaminants of concern include the following:

**Volatiles**: (ppb)

Groundwater: Phenol - 13000DJ

2-Chlorophenol - 2300J

Soil:

Chlorobenzene - 4400J

Xylenes - 4500

4-Methyl-2-Pentanone - 240000J Tetrachloroethene - 1400000J

Semi-volatiles: (ppb)

Soil:

Pentachlorophenol - 240J

Phenol - 1400J

1,4-Dichlorobenzene - 4700 Benzo(a)pyrene - 3700J 2-Chloroaniline - 4800

Pesticides/PCBs: (ppb)

Soil:

Arochlor 1260 - 6600

Inorganics:

Groundwater: Antimony - 72.3 ppb Arsenic - 27.7 ppb

Arsenic - 27.7 ppb Barium - 403 ppb

Manganese - 20400 ppb

Soils:

Barium - 268 ppm Manganese - 384 ppm

# 4.6 SAUGET SITE S / DRUM DISPOSAL AREA

Currently, there is no file information available to the Agency concerning the operational history of this site. No sampling has occurred at the site, however, the Agency is planning to conduct a study of the site in the fall of 1994. It has been added to the Area 2 Sites due to its proximity to the other Area 2 Sites and the belief that the site was operated by the same operator as the other Area 2 Sites.

### SECTION 5

#### **MIGRATION PATHWAYS**

### 5.1 INTRODUCTION

This section includes data and information which may be useful in analyzing the impact of the Sauget Area 2 Sites on the four migration pathways identified in the CERCLA Hazard Ranking System (HRS). The four migration pathways are groundwater, surface water, air, and soil exposure.

### 5.2 GROUNDWATER

The Sauget Area 2 Sites are located in a region known as the American Bottoms. Well logs provided to the IEPA from the Illinois State Water Survey (ISIS) indicate that the upper stratigraphy in this region consists of 70-120 feet of unconsolidated alluvium and glacial outwash overlying Mississippian-aged limestone and sandstone formations (Ste. Genevieve and St. Louis limestones). The valley fill deposits are composed of two formations, the uppermost being the Cahokia Alluvium followed by the Mackinaw Member of the Henry Formation.

The Cahokia Alluvium is composed predominantly of silt, clay, and fine sand deposits, generally indicative of an aggrading environment. In the Sauget area, these deposits vary in thickness, with a range of 15 to 30 feet. This formation was laid down via flood events, eolian activity, bank slumping, erosion and/or slugs

of material deposited directly by tributary streams. The Mississippi River has frequently reworked this formation in such a way that coarser material is intermingled with finer-grained deposits.

Underlying the Cahokia Alluvium is the Mackinaw Member of the Henry Formation. This formation is composed of sand and gravel from glacial outwash. In the Sauget area, this material rests directly on the bedrock surface and varies between 70 and 100 feet in thickness.

hydrogeologic information has been obtained Local through groundwater monitoring in the Sauget area. In the vicinity of the Area 2 Sites, shallow sand and gravel deposits close to the ground surface yield significant quantities of water for nearby homes and business. Horizontal groundwater movement in the shallow deposits generally follow the land surface topography., with lateral movement toward local discharge zones (wells and small streams), and some movement into the deeper unconsolidated aguifers. Groundwater is encountered between 10 and 28 feet below the ground surface in the area. These figures can be used for the depth of aquifer of concern (AOC). Groundwater in the deeper unconsolidated valley fill deposits generally follows the bedrock surface. Accordingly, groundwater generally flows downstream through the sand and gravel aquifers in much the same direction as the original stream flow, but at a much slower rate.

Most area residents are supplied with drinking water by the Illinois-American Water Company (IAWC) which operates an intake on the Mississippi River upstream of Sauget. IAWC sells water to various water departments and districts within the Sauget/Cahokia area. However, some area residents do obtain drinking water from shallow wells. Illinois Department of Public Health (IDPH) files and Illinois State Water Survey (ISWS) well logs indicate at least 50 residents have wells which are used for drinking or irrigation. These wells are located in Cahokia (23), East St. Louis (5), East Carondolet (16) and Dupo (6). These do not include the wells at the homes on Judith Lane in Cahokia or an unknown number of residents in the Schmids Lake area (approximately 2.3 miles southwest) that are not covered by any public water distribution. A 1983 report by the Southwestern Illinois Metropolitan and Regional Planning Commission (SIMRPC) listed 69 residences in Centreville Township (includes Sauget, Cahokia, Alorton, and Centreville) which use private water systems. The same report lists 57 residences in East St. Louis and 365 residences in Sugarloaf Township (includes Dupo and East Carondolet). SIMRPC based their report on 1980 census data.

### 5.3 SURFACE WATER PATHWAY

Site drainage is controlled by the Army Corps of Engineers 500 year levee for Sauget Area 2 Sites O, P, and S. Sites Q and R are west of the levee are not protected from the river's flood events, such as those of 1973 and 1993. Drainage from these two sites enter the

Mississippi directly. There are numerous probable points of entry (PPE) as there are numerous leachate seeps and Site Q's pipe which are all located along Sites Q and R. The American Bottoms outfall at river mile 178.2 would be the PPE for the three sites east of the levee. A 15-mile surface water map is included in Appendix B of this report.

The average discharge of the Mississippi River, as measured over a 128 year period at St. Louis, Missouri, is 179,800 cubic feet per second. The 15-mile surface water target distance limit extends to Mississippi River mile 163.2.

Surface water use in the immediate area (from Mississippi River mile 178 to 174) is limited to recreation and freight trafficking. There is an upstream surface water intake at river mile 181, which supplies most of the Illinois residents within a four-mile radius of the site. The city of St. Louis is also supplied by an upstream surface water intake, about 12 miles north at river mile 190. At downstream river mile 149 (about 20 river miles south of the area), the village of Festus, Missouri (population 10,000) utilizes a Ranney well, adjacent to the Mississippi River, for drinking water. A well of this type is assumed to draw in surface water due to its construction and location to the river. On the Illinois side, the nearest downstream surface water intake is located approximately 65 miles south of the Sauget Area 2 sites, at river mile 110. The intake is used by the town of Chester and surrounding communities

in Randolph County.

The Illinois Department of Conservation (IDOC)'s Resource Inventory for the Mississippi River (between river miles 178-162) shows fish spawning areas, commercial fishing areas, sport fishing areas, important wildlife habitat and bald eagle use at selected areas within the 15-mile target distance limit.

Annual fish production is reported to be approximately 21,738 pounds within the target distance limit. This figure is based on data available for the harvest between river mile 0 and 200.5 was averaged over two years divided by 200.5 river miles, and multiplied by the number of miles in the target distance limit (TDL) to estimate the annual production of the Mississippi River fishery.

Numerous environmentally sensitive areas are located within the 15-mile TDL. According to the U.S. Department of the Interior's National Wetland Inventory maps, there are several wetland areas located on the sites themselves. Three wetlands are located on Site Q and two on Site P.

### 5.4 SOIL EXPOSURE/DIRECT CONTACT

Under this pathway, workers located within 200 feet of known contamination were considered. Site O has approximately 50 workers,

and contaminants were detected at a depth of one and one-half to four feet. Site O is surrounded on two sides by fencing which also surrounds the American Bottoms Regional Treatment Plant. An access road cuts across lagoon number three. Therefore, access is not limited.

P.T.s Showclub is situated on top of Site P and employs approximately 35 persons. The showclub is located within 200 feet of samples taken, which show Level 1 concentrations of PCBs and metals. No barrier exists between areas of observed Level 1 contamination and public roads and the showclub.

There are three separate operations located at Site Q, according to Richard Burke, President of Eagle Marine Industries, Mr. Incorporated of St. Louis and owner of Site Q. River City Landscaping of St. Louis operates a section near the southern section of the main portion of Site Q and employs approximately 20 people. Peavey Grain Company operates near mid-Q and employs approximately 25 persons. Bauer construction is in the process of storing concrete with rebar on the southern part of the main portion of Q. Bauer Construction will be separating the concrete from the rebar, producing gravel from the concrete and spreading it on Site Q.

There are currently no workers operating at Site R.

### 5.5 AIR PATHWAY

Documented releases to the ambient air were observed in the 1988 Ecology and Environment study of the sites. Also, the elevated HNu readings during the site reconnaissance at Site O in June, 1991, denotes off-gassing of contaminants in the soil. It has been estimated that approximately 2000 people live within a mile of the Area 2 sites and approximately 175,000 people live within a four mile radius of the sites, based upon 1990 U.S. Census Bureau figures. The table below shows the four-mile radius population calculation. According to the Illinois Department of Commerce and Community Affairs (1988), approximately 3200 people are employed within two miles of the site.

Target Population Calculation

City	Population Density/ Total Population	Area w/in 4-Mile Radius	Population w/in 4-mile radius
St. Louis	7,379/sq mi	14.5 sq mi	106,995
E. St. Louis	4,119/sq mi	9.5 sq mi	39,130
Alorton	2,237	100%	2,237
Cahokia	18,904	100%	18,904
Centreville	9,747	75%	7,310
Unincorporate Areas	d		

Total Target Population = 174,576

Also of concern in the air pathway are the numerous wetland areas which exist within a four mile radius of the sites. A map showing the se areas may be found in Appendix C. A Bald Eagle nesting area is present on the south tip of Arsenal Island, approximately 2.5 miles southwest of the Sauget Area 2 Sites.

## SECTION 6

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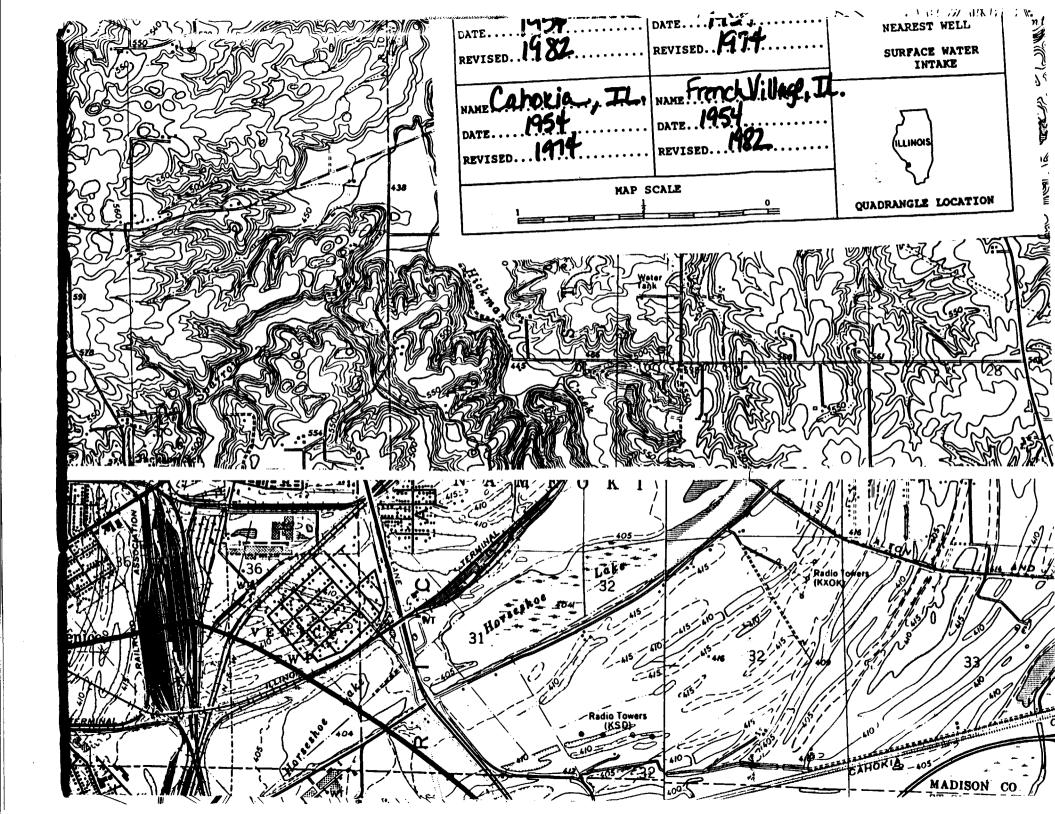
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		SYSTEM CARE	TOTAL CARGOD IS SING	( Childre-Grand ( Cane) 3 that 4 Chypania and to 1864, and 571688	19 - 9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 -	AB — ABBANI † Angular Ma † Angular Ma † Angular Ma † Fallerance † Antonina † Antonina * Antonina † Antoni	NE 960 miler miler miler professor pASS in the SI ISS one found t	NO - RECEIT GASTING    Success   Suc	10 - years 5-07 1 Canno de 2 Sent 6 Septe 6 Vegants 8 Vegants		Tell — Description  Temporations  Temporations	OU - GOT IN
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	e man 42775	SYSTEM GLASS GLASS	TOTAL CARGOD IS SING	( Childre-Grand ( Cane) 3 that 4 Chypania and to 1864, and 571688	PARENTAL SUBSYSTEMS. The s	AB — ABJORN  1 Alaysi 2 Assents the 2 Assents the 2 Assents the 2 Assents the 2 Assents 2 Assents 3 Assents 4 Assents 4 Assents 5 Assents 6 Assents 6 Assents 7 Assents 7 Assents 100 — 100 7	int out of the control of the contro	NO - RECEIT GASTING    Success   Suc	10 - years 5-07 1 Canno de 2 Sent 6 Septe 6 Vegants 8 Vegants		This product of the second form	GW — GPF Granum GW — GPF Granum Gwan Gwan Gwan Gwan Gwan Gwan Gwan Gwan
	<b>4</b> ± <sup>MH</sup> 19 <b>4</b> 22179 •	SYSTEM GLASS Backers	TOTAL CARGOD IS SING	1 Control Ground 2 Stand 2 Stand 2 Stand 2 Stand 3 Stand 5 Sta	# Out - STREAMEN    Dubush   D	AB — ABJORN  1 Alaysi 2 Assents the 2 Assents the 2 Assents the 2 Assents the 2 Assents 2 Assents 3 Assents 4 Assents 4 Assents 5 Assents 6 Assents 6 Assents 7 Assents 7 Assents 100 — 100 7	int out of the control of the contro	NO - RECEIT GASTING    Success   Suc	10 - years 5-07 1 Canno de 2 Sent 6 Septe 6 Vegants 8 Vegants		This - Description  This -	OW - GPT to Below & GPT OW - GPT
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	15.TM	SYSTEM GLACE British	TOTAL CARGOD IS SING	1 Control Ground 2 Stand 2 Stand 2 Stand 2 Stand 3 Stand 5 Sta	PARENTAL SUBSYSTEMS. The s	AB — ABJORN  1 Alaysi 2 Assents the 2 Assents the 2 Assents the 2 Assents the 2 Assents 2 Assents 3 Assents 4 Assents 4 Assents 5 Assents 6 Assents 6 Assents 7 Assents 7 Assents 100 — 100 7	int out of the control of the contro	NO - RECEIT GASTING    Success   Suc	10 - years 5-07 1 Canno de 2 Sent 6 Septe 6 Vegants 8 Vegants		The properties of the properti	ON - GPA to the thickness does not to the thickness does not to the thickness does not to the thickness not the thicknes
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		****	The source of th	1 Continue Ground 2 Shad 2 Shad 3 Shad 4 Septing and to TSSAL and STREET 6 TSSAL and SCREET 5 TSSAL 5 TSSAL 6	RONMENTAL	AS — Albania 1 August 1944 2 August 1944 2 August 1944 4 Fauncia 1944 4 Fauncia 1944 5 Scholamour August 1944 5 Scholamour 1 Canada - August 1944 1 Canada - August 1944 2 Canada - August	inc sees out and a see of horizon harde or the of HE on found in PALUST	TRINE	US - UNION DOOR OF THE PROPERTY OF THE PROPERT	and 8  and 8  and 8  and 9  an	s Area.	Ott - Gript to Undersom See
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	The Assessment of the State of	II	I POOTE COTE	on the order of th	RONMENTAL	AB — Allgories Ma 2 Aquests Ma 2 Aquests Ma 2 Aquests Ma 4 Tenney Vo 4 Tenney Vo 5 Tenney Vo 5 Tenney Vo 5 Tenney Vo 6 Tenney Vo 6 Tenney Vo 7 — March	AC OND  THE OWN OF THE PARTY OF THE OWN THE OW	TRINE	in the second	Site	S Area.	Ott - Gript to Undersom See
	The Assert of the Control of the Con	QUAL	LLINOIS PROTEC	- HOUSE	AGENCY	AB — Allgories Ma 2 Aquests Ma 2 Aquests Ma 2 Aquests Ma 4 Tenney Vo 4 Tenney Vo 5 Tenney Vo 5 Tenney Vo 5 Tenney Vo 6 Tenney Vo 6 Tenney Vo 7 — March	PALUETANA SI	TE: Sol	de la	Site	S Area.	Ott - Gript to Undersom See
	The same of the sa	QUAL	I POOTE COTE	- HOUSE	AGENCY	AB — Allgories Ma 2 Aquests Ma 2 Aquests Ma 2 Aquests Ma 4 Tenney Vo 4 Tenney Vo 5 Tenney Vo 5 Tenney Vo 5 Tenney Vo 6 Tenney Vo 6 Tenney Vo 7 — March	PALUETANA SI	TE: Sal	de la	Site	S Area.	Ott - Gript to Undersom See
	THE WASHINGTON	III QUAL NUME	LLINOIS PROTEC	ENVIF	RONMENTAL	AB — Allgories Ma 2 Aquests Ma 2 Aquests Ma 2 Aquests Ma 4 Tenney Vo 4 Tenney Vo 5 Tenney Vo 5 Tenney Vo 5 Tenney Vo 6 Tenney Vo 6 Tenney Vo 7 — March	PALUET SI	TE: Sol	in a section of the s	Site	Area.	Ott - Gript to Undersom See
	CAN WAS A	III QUAL NUME	LLINOIS PROTEC	ENVIF	AGENCY	AB — Allgories Ma 2 Aquests Ma 2 Aquests Ma 2 Aquests Ma 4 Tenney Vo 4 Tenney Vo 5 Tenney Vo 5 Tenney Vo 5 Tenney Vo 6 Tenney Vo 6 Tenney Vo 7 — March	PALUET SI	TE: Sol	in a section of the s	Site	Area.	Ott - Gript to Undersom See
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	The Carlos and the Ca	III QUAL NUME	LLINOIS PROTEC	ENVIF	RONMENTAL	AB — Allgories Ma 2 Aquests Ma 2 Aquests Ma 2 Aquests Ma 4 Tenney Vo 4 Tenney Vo 5 Tenney Vo 5 Tenney Vo 5 Tenney Vo 6 Tenney Vo 6 Tenney Vo 7 — March	PALUET SI	TE: Sol	in a section of the s	Site	Area.	Ott - Gript to Undersom See

# APPENDIX C CONTENTS

- 1937 AERIAL PHOTOGRAPH
- 1955 AERIAL PHOTOGRAPH
- 1962 AERIAL PHOTOGRAPH
- 1962 AERIAL PHOTOGRAPH
- 1966 AERIAL PHOTOGRAPH
- 1974 AERIAL PHOTOGRAPH



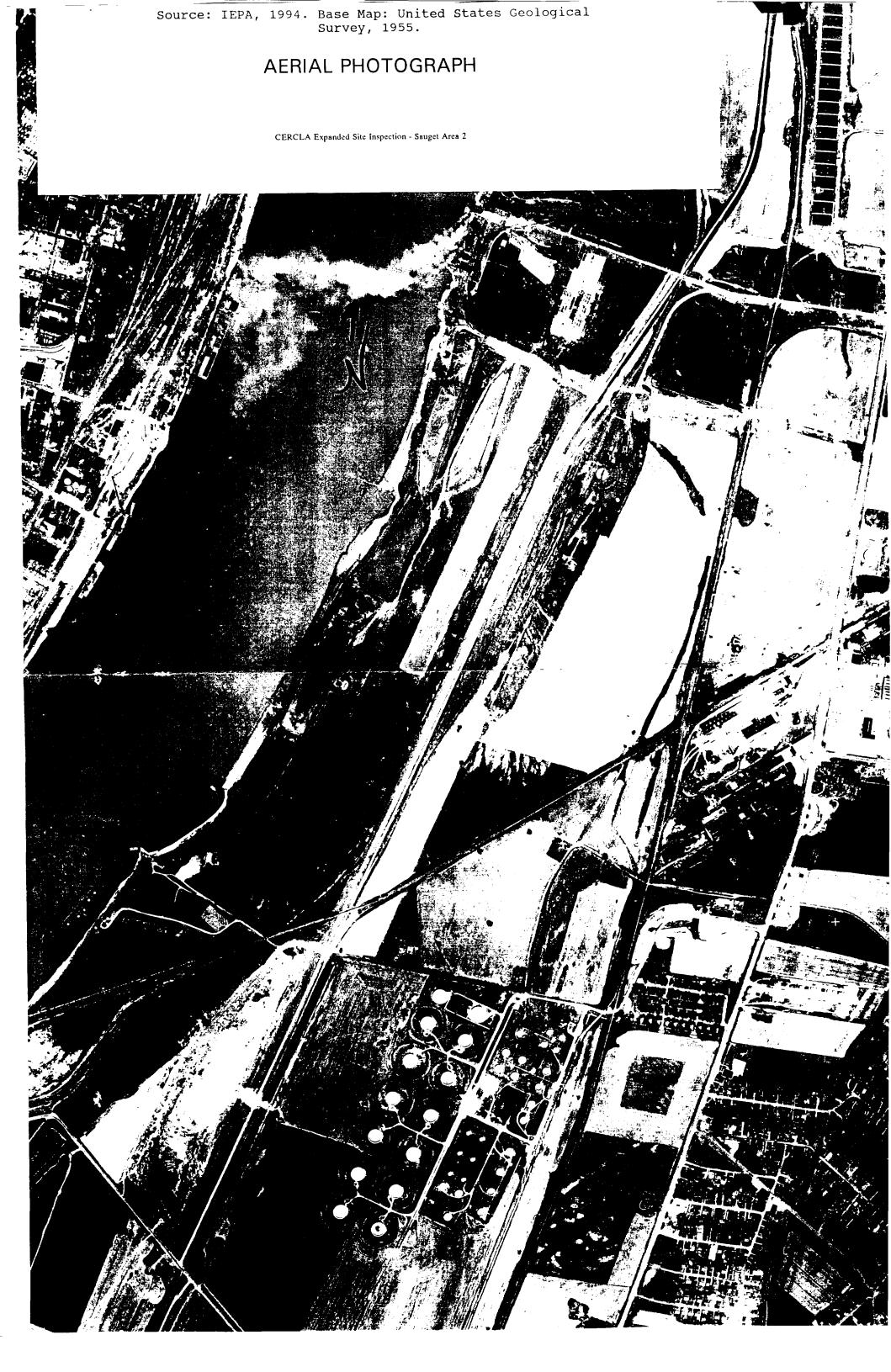
Source: IEPA, 1994. Base Map: Illinois Department of Transportation, 1974.

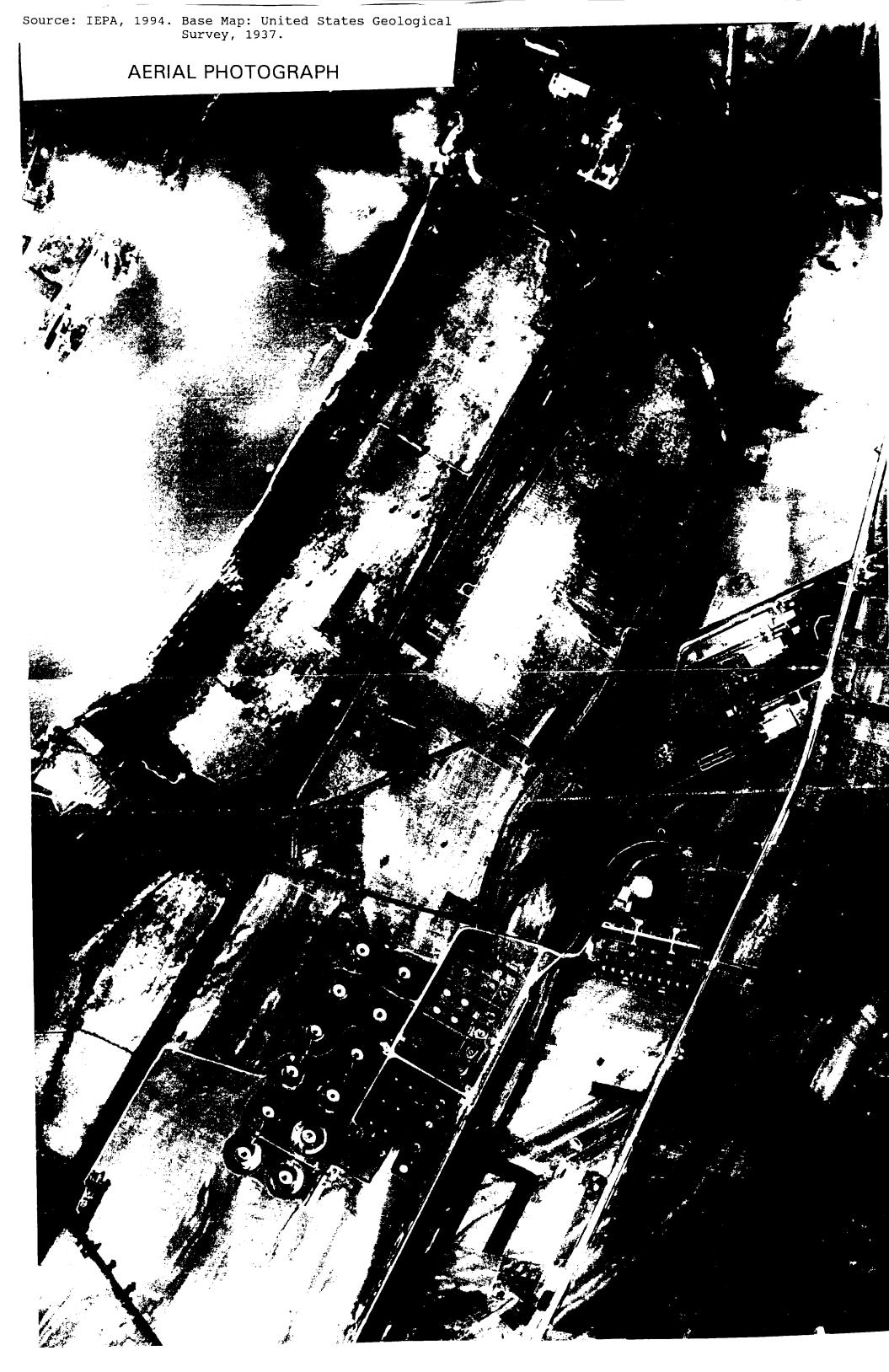
# **AERIAL PHOTOGRAPH**

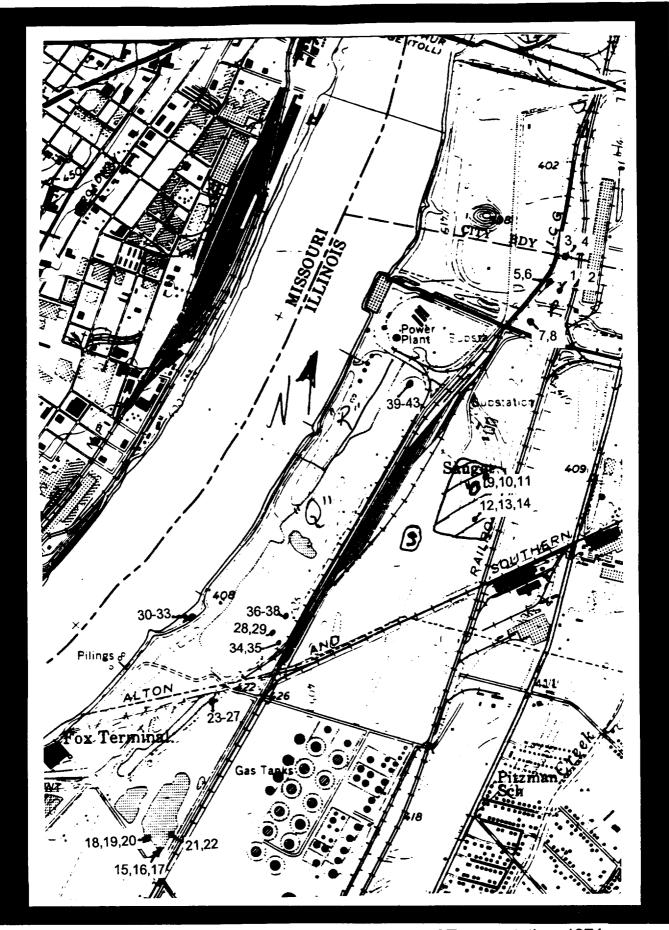












Source: IEPA, 1994. Base Map: Illinois Department of Transportation, 1974. Scale: 1:1800

1994 ESI Photo Location Map

Date: March 16, 1994

Time: 10:25 am

Photo Taken By:

ILD

Direction: W

Comments:

Sample point XIDI located to Left of Photo.

Date: March 16, 1994

Time: 10:200m.

Photo Taken By:

Kim Hubber

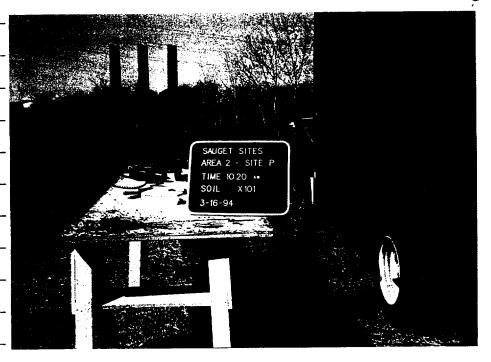
ILD

Direction: **SW** 

Comments:

Sample point XIDI.

SteP





Date: March 16,1994 Time: 9:500m.  Photo Taken By:  Lim Abbut	No PHS
ILD	
Direction: N  Comments: XIOZ	
Site P	
Date: March 16,1994 Time: 4:50am.	•
Photo Taken By: Kim Hubbut	No Horo.
L	71.7
ILD	
Direction: 5 Comments: XIDL	
Comments: XIDL	
5-1.0	
SiteP	

o PHOTO

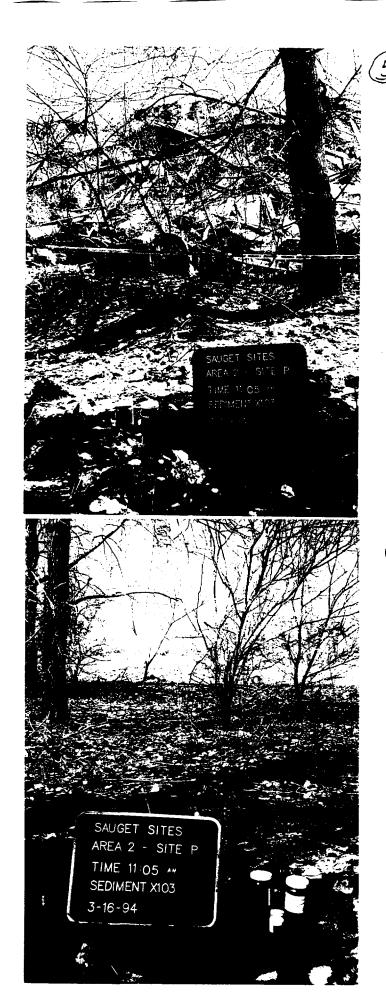
**(4)** 

3

Date: March 16, 1994 Time: 11:050m. Photo Taken By: Kim HubbeA ILD Direction: **SE** Comments: Sample X103. Nok debis in background. SiteP Date: Nard 16,1994 Time: 11:050m. Photo Taken By:

Kim Hubba Direction: JW Sample X 103.

Note power-bover
in background.



Date: March 16, 1994 Time: 11:30 am Photo Taken By: Lin Hubbert Direction: E Comments: Sample
X104- P.T.s Showlub in background. Site f Date: March 16, 1994 Time: 11:30 am Photo Taken By: Lim Hubbert Direction: W Comments: Sample Electric Smokestacks in background. . Site P





Date: March 11e, 1994  Time: 3:35 pm actually 4:10P  Photo Taken By:  Lim Dubbert
<u>L</u>
Direction: 5W
Direction: 5W
Comments: Sample
Comments: Sample X105- Site O
Date: March 110,1994  Time: 4:10 pm.  Photo Taken By:  Sym Aubbert
<u>L</u>
ILD
Direction: 5W
Comments: Sample
X105Site D

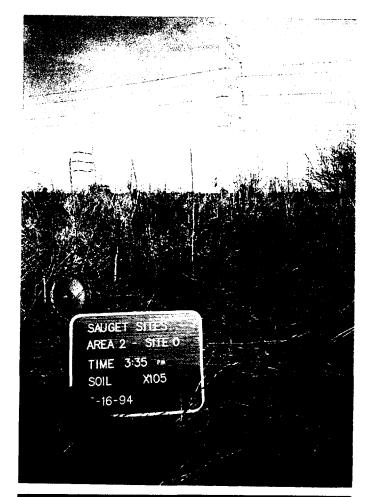


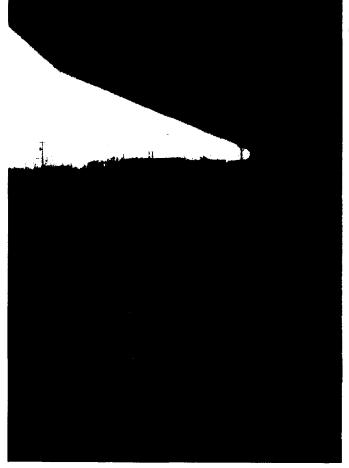


Date: March 16, 1994 Time: 4:10 PM Photo Taken By: Lin Hubbert ILD Direction: NE Comments: Sample X105- Site O Note power tower in background Date: March 16, 1994 Time: 5:25 pm. Photo Taken By: Kim Hubbert ILD Direction: WSW Comments: Sample X106- Site O.

American Bottoms

Regional Treatment Plant in background.





Date: March 16, 1994 Time: 5:25 pm. Photo Taken By: Kim dubblet ILD Direction: SSE Comments: Sample X106- Site O. Darling Fertilizer (Abandoned) in background. Date: March 16, 1994 Time: 5:25pm. Photo Taken By: Kim Alubbert ILD Direction: 55E Comments: Sample XIDLe-Site O. (2nd shot)





Date: March 17, 1994

Time: 10:25 am.

Photo Taken By:

Lin Aubbert

ILD

Direction: NNE

comments: Sample X107-Site Q

Borrow pit in background.



Date: March 17, 1994

Time: 10:25 am.

Kim Hubbert

ILD

Direction: 55E

comments: Sample

X107-5it Q.

Level in background Area had been Gooded

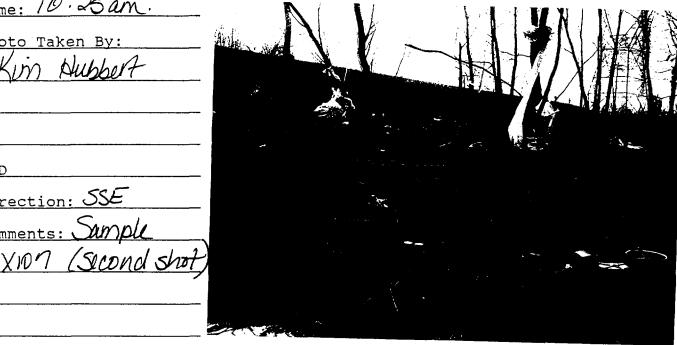
during Summer 193.



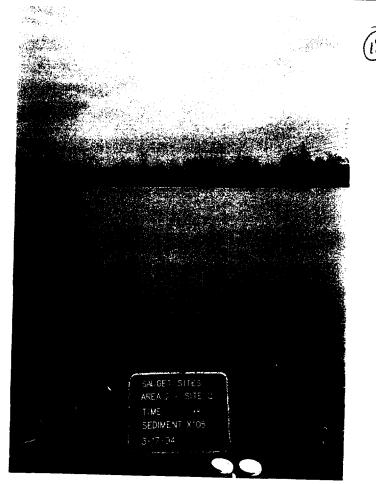
Date: March 17, 1994
Time: 10:25 am.
Photo Taken By:
Kin Aubbert
L
ILD

Direction: SSE

Comments: Sample

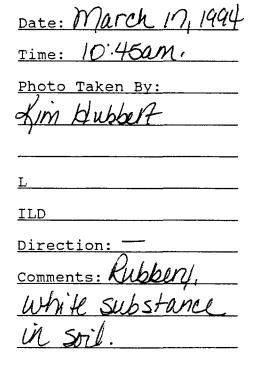


Date: March 17, 1994 Time: 10:45 am. Photo Taken By: Lin Dubbert ILD Direction: NNE Comments: Sample X108- Site Q (Southern end) Sample taken at Southern end of borrow pit.



Date: March 17, 1994
Time: 10:45am
Photo Taken By:
Lim Aubbert
L
ILD
Direction: ESE
Comments: Sample
X108-levelin
background.

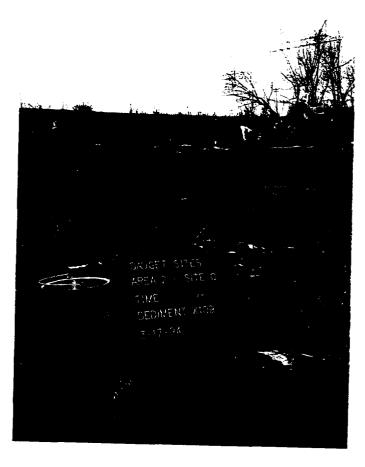






,
Date: March 17, 1994
Time: //:/0 am ·
Photo Taken By:
Lim blubbert
<u>L</u>
ILD
Direction: S ENE
Comments:
Sample X109.
200 mal 10 1001
Date: March 17, 1994
Time: //:/0am
Photo Taken By:
Lim Hubbert
L
ILD
Direction: S
comments: Sample
X109-Southern
end-Site Q-
Note level in
background.

NO PHOTO





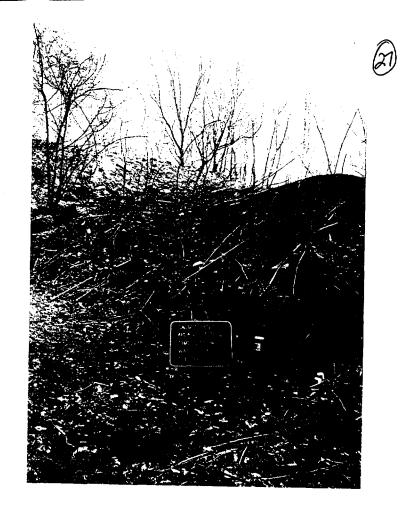
Date: March 17, 1994	
Time: 12:45pm.	
Photo Taken By:	
Kim Bubbert	
<u>L</u>	
Direction: NE	
Comments:	A STATE OF THE STA
Drums scattered	The state of the s
at Site Q- immediate	ely
South of Alton +	
Southern Railroad.	
hew wing are west of Explorer excavation. Date: March 17,1994	
Time: 12:45	
Photo Taken By:	
Lim Subbert	
L	
Direction: SW	
comments: Scattered	
Comments: Scattlered Drums at Site Q.	

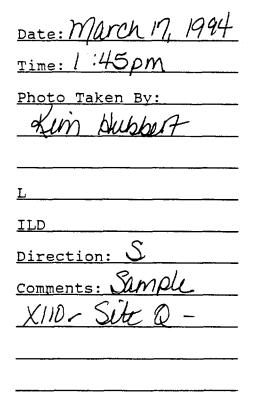
Date: March 17, 1994
Time: 12:55PM
Photo Taken By:
Lim Dubbert
- WIC SWEET
L
ILD
Direction: SW
Comments: Sample
X501. Yaken from
arun - Site a
Date: March 17, 1994
Date: March 17, 1994 Time: 12:55 pm
Time: 12'55 PM
Time: 12'55 PM
Time: 12'55 PM
Time: 12'55 PM
Time: 12'55 PM
Photo Taken By:  Kim Hubbut  L
Photo Taken By:  Kim Hubbert  L  ILD  Direction: SW  Comments:
Photo Taken By:  Kim Hubbut  L  ILD  Direction: SW  Comments:  Sample X5D/.
Photo Taken By:  Kim Hubbert  L  ILD  Direction: SW
Photo Taken By:  Kim Hubbut  L  ILD  Direction: SW  Comments:  Sample X5D/.





Date: March 17, 1994
Time: 12:55 PM
Photo Taken By:  Lim Nubbut
<u>L</u>
ILD
Direction: WE
Comments: Simple
X501- Site Q







24
Date: March 17, 1994
Time: /:45pm
Photo Taken By:
Lym blubbert
L
ILD
Direction: N
Comments: Sample X110-
Site Q-Note
Trade Waste in
backsmund.



Date: March 17, 1944

Time: 2:20 PM

Photo Taken By:

Sim blubbert

L

ILD

Direction:

Comments: Drums along

riverbank: X502

taken from drum

furthest to the

leftin photo:



Date: March 17, 1994	3
Time: 2:20PM.	
Photo Taken By:  Kym Klubbert	
ILD	
Direction: E	
comments: Drums	
at Site Q	
Date: March 17, 1994	3
Time: 2:20PM.	
Photo Taken By:  Kem Hubbert	
т	
ILD	
Direction: £	
Comments: Drums	
at Site Q.	

(33)

E Sample Site & Saken from Jung on



Date: March 17, 1994 Time: 2:20PM Photo Taken By: Lim Subbest Direction: £ Comments: Sample X502-Site 6 Sample taken from arun laying on Date: March 17, 1994 Time: 3:50 PM Lim Hubbert Direction: SW comments: Sample X111- Site Q-Sample taken near XIID.

Date: March 17, 1994
Time: 3:50 PM.

Photo Taken By:

Lin Dubbert

<u>L</u>

ILD

Direction: NNE

Comments: Sample

X111- Site Q-

Note Trade Waste

in background.

Date: March 17, 1994

Time: 4:20 PM

Photo Taken By:

Kim Hubbert

L

ILD

Direction: N

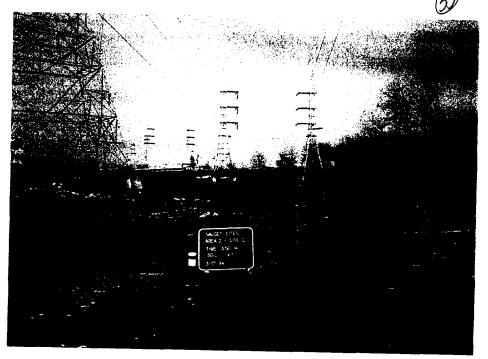
comments: Samples

X113 a X114 ( Dudicate)

Site 6 - borrow

pit norm of Alton!

Southern tracks.





Date: March 17, 1994
Time: 4:20PM
Photo Taken By:
Kim Aubbert
7
L
ILD
Direction: NE
Comments: Samples
X1134 X114 - Site Q
hever to the right
in photo.
Date: March N, 1994
Time: 4:25 pm.
Photo Taken By:
Lyin bubbert
L
ILD
Direction: NE
Comments:
Drum in mounded
area-Immediately
South of borrow pit-
near med-Q-Rit
located in background.



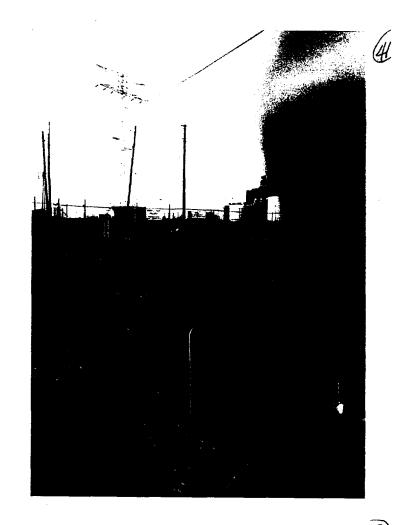


Date: March 17, 1994 Kim Hubbert ILD Comments: "Monpie"-Sample X112 Dark purple-red
material - seam
founds followed Date: March 17, 1994 Time: 4:55 PM Photo Taken By: xim blubbert ILD





Date: March 17, 1994  Time: 4:55 PM
Time: 4:55 PM
Photo Taken By:
Photo Taken By:
L
ILD ;
Direction: NW  Comments: Sample Y//Z
Comments: Sample 1/1/2-
Note entrance to
Note entrance to Site R in backgrd.
Date: March 17, 1994
Time: 4:50PM.
Aym Nubbert
Lym blubbert
<u>L</u>
ILD
Direction:
Comments: Moonpil //
Northern D.
DOG-45





Date: March 17,1994  Time: 4:50 PM  Photo Taken By:  Aym Kubbert  L  ILD  Direction: E  Comments: Monstes- Morthern Q-  Use leg! Yote  Level in blegt.	
Date: Time: Photo Taken By:  L ILD Direction: Comments:	A DANS OF THE STATE OF THE STAT

## TARGET COMPOUND LIST

#### Volatile Target Compounds

Chloromethane Bromomethane Vinyl Chloride Chloroethane Methylene Chloride Acetone Carbon Disulfide 1,1-Dichloroethene 1,1-Dichloroethane 1,2-Dichloroethene (total) Chloroform 1,2-Dichloroethane 2-Butanone 1,1,1-Trichloroethane Carbon Tetrachloride Vinyl Acetate

Bromodichloromethane

1,2-Dichloropropane cis-1,3-Dichloropropene Trichloroethene Dibromochloromethane 1,1,2-Trichloroethane trans-1,3-Dichloropropene Bromoform 4-Methyl-2-pentanone 2-Hexanone Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethylbenzene Styrene Xylenes (total)

#### Base/Neutral Target Compounds

Hexachloroethane bis(2-Chloroethyl)Ether Benzyl Alcohol bis(2-Chloroisopropyl)Ether N-Nitroso-Di-n-Propylamine Nitrobenzene Hexachlorobutadiene 2-Methylnaphthalene 1,2,4-Trichlorobenzene Isophorone Naphthalene 4-Chloroaniline bis(2-chloroethoxy)Methane Hexachlorocyclopentadiene 2-Chloronaphthalene 2-Nitroaniline Acenaphthylene 3-Nitroaniline Acenaphthene Dibenzofuran Dimethyl Phthalate 2,6-Dinitrotoluene Fluorene 4-Nitroaniline 4-Chlorophenyl-phenylether

2,4-Dinitrotoluene Diethylphthalate N-Nitrosodiphenylamine Hexachlorobenzene Phenanthrene 4-Bromophenyl-phenylether Anthracene Di-n-Butylphthalate Fluoranthene Pyrene Butylbenzylphthalate bis(2-Ethylhexyl)Phthalate Chrysene Benzo(a) Anthracene 3,3'-Dichlorobenzidene Di-n-Octyl Phthalate Benzo(b) Fluoranthene Benzo(k)Fluoranthene Benzo(a) Pyrene Indeno(1,2,3-cd) Pyrene Dibenz (a, h) Anthracene Benzo(g,h,i)Perylene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene

#### Acid Target Compounds

Benzoic Acid
Phenol
2-Chlorophenol
2-Nitrophenol
2-Methylphenol
2,4-Dimethylphenol
4-Methylphenol
2,4-Dichlorophenol

2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 4-Chloro-3-methylphenol 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol

Pentachlorophenol 4-Nitrophenol

#### Pesticide/PCB Target Compounds

alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Heptachlor
Aldrin
Heptachlor epoxide
Endosulfan I
4,4'-DDE
Dieldrin
Endrin
4,4'-DDD
Endosulfan II
4,4'-DDT

Endrin Ketone
Endosulfan Sulfate
Methoxychlor
alpha-Chlorodane
gamma-Chlorodane
Toxaphene
Aroclor-1016
Aroclor-1221
Aroclor-1232
Aroclor-1242
Aroclor-1248
Aroclor-1254
Aroclor-1260

# Inorganic Target Compounds

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium

Manganese
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc
Cyanide
Sulfide
Sulfate

## QUALIFIER DEFINITION ORGANICS

## DEFINITION INORGANICS

Compound was tested for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL is also multiplied by two, to account for the fact that only half of the extract is recovered.

Analyte was analyzed for but not detected.

estimated value. Used when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero. Used in data validation when the quality control data indicate that a value may not be accurate.

Estimated value. Used in data validation when the quality control data indicate that a value may not be accurate.

 C This flag applies to pesticide results where the identification is confirmed by GC/MS. Method qualifier indicates analysis by the Manual Spectrophotometric method.

 B Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

The reported value is less than the CRDL but greater than the instrument detection limit (IDL).

Identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values are flagged with the "D" flag.

not used

QUALIFIER	DEFINITION	ORGANICS

#### **DEFINITION INORGANICS**

E Identifies compounds whose concentrations exceed the calibration range for that specific analysis. All extracts containing compounds exceeding the calibration range must be diluted and analyzed again. the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses must be reported on separate Forms I. The Form I for the diluted sample must have the "DL" suffix appended to the sample number.

The reported value is estimated because of the presence of interference

• A This flag indicates that a TIC is a suspected aldol concentration product formed by the reaction of the solvents used to process the sample in the laboratory.

Method qualifier indicates analysis by Flame Atomic Absorption (AA).

M not used

Duplicate injection (a QC parameter) not met.

N not used

Spiked sample (a QC parameter) recovery not within control limits.

S not used

The reported value was determined by the Method of Standard Additions (MSA).

W not used

Post digestion spike for Furnace AA analysis (a QC parameter) is out of control limits of 85% to 115% recovery, while sample absorbance is less than 50% of spike absorbance.

\* not used

Duplicate analysis (a QC parameter) not within control limits.

+ not used

Correlation coefficient for MSA (a QC parameter) is less than 0.995.

QU	ALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
•	P	not used	Method qualifier indicates analysis by ICP (Inductively Coupled Plasma) Spectroscopy.
•	CA	not used	Method qualifier indicates analysis by Cold Vapor AA.
•	AV	not used	Method qualifier indicates analysis by Automated Cold Vapor AA
•	AS	not used	Method qualifier indicates analysis by Semi-Automated Cold Spectrophotometry.
•	T	not used	Method qualifier indicates Titrimetric analysis.
•	NR	The analyte was not required to be analyzed.	The analyte was not required to be analyzed.
•	R	Rejected data. The QC parameters indicate that the data is not usable for any purpose.	Rejected data. The QC parameters indicate that the data is not usable for any purpose.

# APPENDIX F CONTENTS

- 1. 1988 EXPANDED SITE INVESTIGATION REPORT PREPARED BY ECOLOGY AND ENVIRONMENT FOR THE STATE OF ILLINOIS.
- 2. 1991 CERCLA SCREENING SITE INSPECTION REPORT PREPARED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY FOR SAUGET SITES AREA 2.

EXPANDED SITE INVESTIGATION

DEAD CREEK PROJECT SITES

AT CAHOKIA/SAUGET, ILLINOIS

FINAL REPORT

VOLUME 1 OF 2

May 1988

# Prepared for:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
Division of Land Pollution Control
2200 Churchill Road
P.O. Box 19276
Springfield, Illinois 62794-9276



# ecology and environment, inc.

111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL: 312-663-9415 International Specialists in the Environment

recycled paper

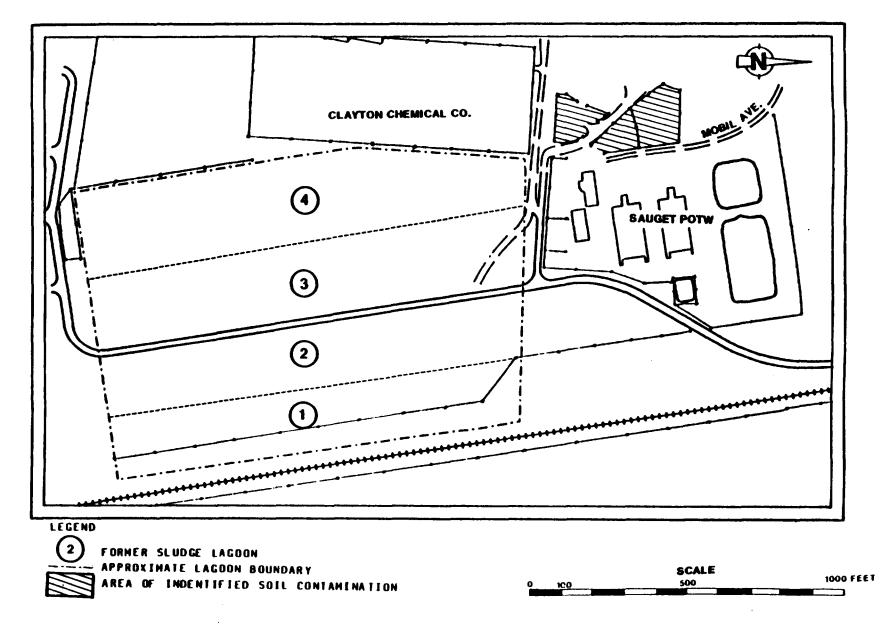


FIGURE 0-1
FORMER SLUDGE LAGOONS AND CONTAMINATED SOIL AREAS AT SITE O

TABLE 0-1: IDENTIFIED ORGANIC COMPOUNDS IN SAMPLES FROM TRENCH EXCAVATION AT SITE O (COLLECTED JULY 20, 1984 BY RUSSELL AND AXON, INC.)

PARAMETERS	SAMPLE 1	SAMPLE 2	BLANK
2,4-Dichlorophenol Pentachlorophenol 2,4,6-Trichlorophenol Crysene Benzo-k-Fluoranthene	50.1 3,600 39.3 123 15.9	159 2.2 0.45	
Bis(2-Ethylhexyl) Phthalate 1,2-Chlorobenzene	10.9	12.2	0.098
1,4-Dichlorobenzene Di-Butyl Phthalate Phenanthrene Pyrene 1,2,4-Trichlorobenzene PCBs	100 102 65.3	8.01 5.06 1.6 2.1 1.6	0.1
Benzo(a)Pyrene	4.2	1.0	

NOTE: All results in ppm.

Blanks indicate compound not detected.

\* Identified, but values cannot be verified.
a Analysis performed by Envirodyne Engineers, Inc. (EEI), St. Louis, MO.

TABLE 02: ANALYTICAL RESULTS FOR SOIL SAMPLES AT SITE O (SPLIT SAMPLES COLLECTED FEBRUARY 19, 1983 BY IEPA AND EEI).

S	25	R	F	T	F	М	A	R	A	P
•	(	К	Ł١	ı	Ł	M	A	к	A	۲

SAMPLE	NO. (Depth)	PCB - IEPA	PCB - EEI	TCDD - IEPAª	TCDD - EEI	Comment
	0" - F")	1,500	3,690			
2A (	0"- F")	7,600	5,350			
2B (	7" - 13")	390	716			
3A (	0" - 7")	9,100	137,250			
3B (	7" - 13")	40	28	·	· ·	
4A (	0" - 6")	20,000	21,020			
4A (	$0^{\text{H}} - 6^{\text{H}}$	-	15,510			Duplicate-EEI
4B (	6" - 13")	54,000	149,600			
5A (	0" - 6")	32,000	112,930	18	28	
5A (	0" - 6")	-	-	17	-	Duplicate-IEPA
5B (	6" - 14")	20,000	12,050	4.1	5.1	
6 (	0" - 8")	120	90			

NOTE: All results in ng/g (ppb).

Blanks indicate below detection limits.

- Indicates parameter not analyzed.

a Hazelton Raltech, Inc. performed TCDD analysis for IEPA.

TABLE 0-3: ANALYTICAL RESULTS FOR SOIL SAMPLES AT SITE O. (SPLIT SAMPLES COLLECTED MARCH 12, 1983 BY IEPA AND EEI)

D	ΔD	ΔN	٩E.	TF	R۲
_	мп	~ I'	יורי	ır	<b>~</b> 1

<del></del>	L	FARAMETERS	<b>L</b>
SAMPLE NO. (Depth)	TCDD - IEPAª	TCDD - EEI	COMMENTS
7A (0"- 6") 7B (8" - 16") 8A (0" - 6") 8B (6" - 12) 8C (13" - 18") 8D (18" - 25") 8D (18" - 25")	1.8 77 *	44 Interferences 19 37 56	Duplicate
9A (0" - 6") 9B (6" - 12") 9C (14" - 21") 9D (22" - 28") 10A 10B	1.3 * 0.92 12 *	13	Control Sample Control Sample
11A (0" - 6") 11B (G" - 18") 12 (10" - 19") 13A (0" - 7") 13B (7" - 18") 14 (0" - 6") 15 (0" - 16") 16 (0" - 18")	* * 13 25	13 170	Composite of soil samples

NOTE: All results in ng/g (ppb).
Blanks indicate below detection limits.

\* Sample not collected by IEPA.

a Hazelton Raltech, Inc. performed TCDD analysis for IEPA.

# APPENDIX E

# SUMMARY TABLES FOR SITE-SPECIFIC CONTAMINANT LOADING TO THE MISSISSIPPI RIVER

4-2 -[4-1

#### CONTANTHANT LOADING TO RIVER DUE TO MORIFOWIAL FLOW AT SHALLOW ZONE IN SITE O\*\*\*

	****		4016	****	A6:6-			out.			om.	
169,66	60.016-	132,000	(3.5-	119,000	re.s-	Q#		GM .		-+	OM.	-•
611,64	TS.278-	132,000	££.7-	000'611	1519-	an		GM			04	
94,120	19.600,1-	132,660	P\$ ' 8-	000'611	●F.F-	an .		d m			GM	
169'66	91.716-	133,666	re.r-	000'611	50.9-	98		an .			98	
195'491	of . 125-	133,000	cr.c-	000'611	€C, C-	g#		g <b>n</b>			<b>GM</b>	
015,111	16.30-	133,000	TC.0-	000'611	££.0-	an		au			O.	
EE0'TII	96-866	133,000	rr.s	909'611	49.5	GH .		GM .			ant	
102,660	TS. 666	133,000	96.5	900'611	19.5	GM		OM			Q#	
10,260	-135.03	133,000	10.1-	119,000	16:0~	<b>GM</b>		QM			Qsi	
657,56	02.ST&-	133,000	\$6.8-	000'611	00·S-	Qui		Gel			Q.M	
291'56	69.606-	133,000	1519-	000'611	10.2-	<b>du</b>		GH			GM .	
(,13)	(4 <del>0</del> 9/ <sub>4</sub> 32)	(3/5a)	(1p/q1)	(7/6n)	(Jp\qek)	(7/8n)	{JP\qek}	(3/\$n)	(1 <b>p</b> /q1)	Miver (1b/dey)	(7/8n)	(JP/qel)
Ytee	F104 B0E0 0	Ave. Conc.	to Minot	Ave. Conc.	40 MADE	Molghted Ave. Conc.	to Miver	Nelghted Ave. Conc.	to Biver	es gaibees	Ave. Cenc.	30A]E 03
		be the Left	\$ujpeej	he ighted	Sulprol	Carcinegenic PMAs**	Sulbeal	Mon-Carcinogenic PMAn**	fulpeo?	Total Pake	be 2 dg 2 eW	Sulptol
		40C#		40111104								
	(\$23) 621,29 621,29 621,29 621,29 621,29 621,29 621,29 621,29	(Yeb\(^231) (^232)  (Yeb\(^231) (^232) (^232) (^232) (^232)  (Yeb\(^231) (^232) (^2	122,000   124,000   122,000   123,	161   162   162   163	\$100   \$100	10   10   10   10   10   10   10   10	\(\frac{1}{12\color=0}\) (16\(\frac{1}{2}\) (16\(	Aton Piou Raco Q Avo. Conc. Co Biver Avo. Conc. Co Biver Noighted Avo. Conc. Co Biver 122, deγ) (12√deγ) (12√d	(ξε <sup>2</sup> ) (ξε <sup>2</sup> √day) (ug/L) (1b/day) (ug/L)	15   15   15   15   15   100   -3   15   15   15   15   15   15   15   1	\$\frac{1}{12\frac{1}{2}} \ \( \frac{12\frac{1}{2}}{12\frac{1}{2}} \ \( \frac{12\frac{1}{2}}{12\frac{1}{2}} \ \( \frac{12\frac{1}}{12\frac{1}{2}} \ \( \frac{12\frac{1}}{12\frac{1}{2}} \ \( \frac{12\frac{1}{2}}{12\frac{1}{2}} \ \( \frac{12\frac{1}{2}}{12\frac{1}{2}} \ \( \frac{1}{2}\frac{1}{2} \ \\ \frac{1}{2}\frac{1}{2} \\ \\ \frac{1}{2}\frac{1}{2} \\ \frac{1}{2}\frac{1}{2} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	12   12   13   13   14   15   15   15   15   15   15   15

. 88617817865863

to the detected.

Negative sign designates contaminant migration toward the tiver.

Source: Scology and Savitonment, Inc. 1988.

<sup>.</sup> Lotel Organic Carbon.

<sup>...</sup> Dete trom monitering wells EE-21, EE-25, EE-26 where uned to calculate weighted everage .. Polymeclost atomotics.

# APPENDIX D

# ANALYTICAL RESULTS

Table E-10

CONTAMINANT LOADING TO RIVER DUE TO MORISONTAL FLOW AT INTERMEDIATE SOME IN SITE 0\*\*\*

			20C+		Veletiles							Total PCDs	
			Weighted	Looding	Weighted	Loading	Carcinogosic PMAs**	Looding	Hon-Catcinegenic PRAs**	Loading	Total PMAs"	Weighted	loading
	Area	Flow Bate Q	Ave. Ceac.	to River	Ave. Conc.	to River	Weighted Ave. Comc.	to River	Weighted Ave. Conc.	to River	Loading to	Ave. Comc.	to River
•	(ft²)	(ft <sup>3</sup> /day)	(ug/L)	(1b/day)	(ug/L)	(1 <b>b/day)</b>	(wg/L)	(1b/day)	(ug/L)	(1b/day)	River (1b/dey)	(ug/L)	(lb/day)
Jenuary	\$2,363	-434.62	100	-0.00259	71	-0.001917	100		#D			MD	
February	\$2,363	-371.78	100	-0.0023	71	-0.00165	29		MD.			WD	
Morch	52,343	-62.63	100	-0.00039	71	-4.00024	***		MO			MD	
April	\$2,363	178.03	100	0.00111	71	+0.00079	100		MD			MD	
Ney	52,363	157.09	100	0.00018	71	+0.000697	***		MD			MD	
June	32,363	-20.93	100	-0.00013	71	-0.000093	MD.		MD			MD	
July	52,363	-219.93	100	-0.00137	71	-0.000976	MD.		<b>MD</b>			WD	
August	52,363	-461.75	100	-0.003	71	-0.00314	MD		<b>MD</b>			MD	
Sopt ombor	\$2,363	-576.00	100	-0.0036	71	-0.00254	MD		MD		<b>+-</b>	MD	
October	52,363	-492.22	100	-0.0031	71	-0.00218	MD.		<b>MD</b>			MD	
Hovenber	\$2,363	-167.57	100	-0.00104	71	-0.00074	110		90			MD	
December	\$2,363	-246.10	100	-0.00154	71	-0.00109	ND		MD			₩D	

<sup>·</sup> Total ergenic carbon.

Megative sign designates conteminant migration toward the river.

Source: Ecology and Environment, Inc. 1988.

<sup>\*\*</sup> Polymuclost stematics.

<sup>\*\*\*</sup> Pats from monitoring wells GM198 and GM208 (Geraghty & Miller 1986; 1986s) were used to colculate weighted average calculations.

MD Fot detected.

Tepie E-11

#### COMINMENTS TOYPING TO RIVER DUE TO HORISOWIAL FLOW AT SHALLOW SOME IN SITE Q\*\*\*

									<del></del>				
1000000	451,151	49.945-	568	1000.0-	130	{ <b>0</b> }00.0-	GR		GM			<b>GH</b>	
2 eques c	966,851	16.576	568	£500.0	130	00000.0	CH		<b>GR</b>			G#	
104072	((L', (0)	09:061/1-	568	9910.0-	<b>061</b>	02400·0~	<b>GM</b>		<b>GM</b>			Q#	
10 <b>4m</b> 0340	951'44	07.96£,1-	512	6550.0-	<b>0</b> CT	\$9210.0~	ga		QN			GM	
nâmeş	675'001	01-619'1-	512	1920'0-	730	00010.0~	QM		<b>GM</b>			Q as	
Aya	725, <b>251</b>	\$9:066-	552	T0610.0-	<b>0</b> 61	32760.0-	GM .		OM			QM	
e ten	518'091	26.785-	512	£6500.0-	130	T1500.0-	<b>GH</b>		<b>GM</b>			GM	
Au	E#4'05T	59.440	532	<b>40610.0</b>	061	££760.0	OM .		CHI			Qui	·
1114	100'901	50:155'1	\$68	0.620	130	19810.0	Gel		QM	<b></b> .		QM	
dotte	900'501	15.605	518	\$110°0	•61	36900.0	G#		Qui			an	
openous.	100'601	£0.730-	\$68	F\$10.0-	961	00100.0-	Get		Out			<b>GM</b>	
As week	966,891	£€.49€,1-	568	11050.0-	<b>06</b> t	£1110.0-	Gel		<b>da</b>			GM	
		(Aep/_13)	(3/8n)	(Amp/qt)	(1/80)	(Jp/qE)	(3/84)	(Lep/q1)	(7/6n)	(3p/qc)	Biver (1b/dey)	(7/6n)	(Aep/q1)
	463A ( <sup>5</sup> 33)	D elek well								20418 03	es Suspees	AVO. CORC.	30A [ 8 0 3
	4444	D staff watt	-	to Miver	Ave. Cent.	to Blver	Melghted Ave. Conc.	10A   E 01	Melghted Ave. Conc.	• • •			-
			be ingless	palbood	besite tou	paibani	. Catcinegenic PRAs.	paibsol	Hon-Catcinogenic PMAs**	paibsed	Total PRAs."	Melghted	paibeel
			40C.		Volatiles							Tetal Post	

<sup>.</sup> Total organic carbon.

Mb Net detected,

Megative sign designates conteminant migration toward the river.

Source: Ecology and Environment, Inc. 1988.

<sup>..</sup> Polynuclost stonstics.

<sup>...</sup> Data from monitoring wells EE-89, EE-10, and EE-86 were used to calculate weighted average
concentrations.

Table E-12

CONTAMINANT LOADING TO RIVER DUE TO MORIZONTAL FLOW AT SHALLOW ZONE IN SITE R\*\*\*

			TOC+*		Veletiles							Total PCDs	
			Weighted	Looding	Weighted	Loading	Corcinogonic PMAs**	Loading	Mon-Carcinogenic PMAs**	Looding	Total PHAs**	Weighted	Loading
	Area	Flow Bate Q	Ave. Conc.	to River	Ave. Cenc.	to River	Weighted Ave. Conc.	to River	Weighted Ave. Conc.	to River	Loading to	Ave. Conc.	to Rive
	(\$6 <mark>2</mark> )	(ft <sup>3</sup> /day)	(mg/L)	(1b/day)	(ug/L)	(1b/day)	(ug/L)	(lb/day)	(ug/L)	(lb/day)	River (1b/day)	(mg/L)	(lb/day
January	52,203	-652.30	12,510	-0.47	1,535	-0.003	#0		MD			#D	
Pobrusty	54,492	-403.25	12,510	-0.31	1,555	-0.039	10		NO NO			NO.	
March	67,015	737.17	12,510	0.58	1,555	0.072	WO		MD			#D	
April	72,456	1,060.00	12,510	0.04	1,535	0.1010	NO		MD			MD	
Rey	74,031	471.43	12,510	0.37	1,555	0.046	WO		WD			MD	
June	69,663	-230.54	12,510	-0.10	1,555	-0.022	WD.		<b>WD</b>			MD	
Ju) y	64,140	-641.48	12,510	-0.50	1,555	-0.063	MD		#D			₩D	
August	\$3,071	-953.30	12,510	-0.75	1,955	-0.091	80		WD		~-	MD	
Sopt ombor	49,210	-536.40	12,510	-0.42	1,555	-0.052	<b>80</b>		ND			MD	
Detobot	51,400	~561.16	12,510	-0.44	1,555	-0.054	#6		ND			MD	
Pe vembe r	63,717	522.47	12,510	0.41	1,555	0.051	WD		WD			MD	
December	60,229	-361.37	12,510	~0.28	1,555	-0.035	100		WD			MD	

<sup>\*</sup> Total Organic Carbon.

Degative sign designates contaminant migration toward the river.

Source: Ecology and Environment, Inc. 1988.

<sup>\*\*</sup> Polymuclear Arematics.

<sup>\*\*\*</sup> Data from monitoring wells 9-1, 9-7, 9-11, 8-26A, and 8-28A (Geraghty & Miller 1986; 1986a) were used to calculate weighted average concentrations.

NO Not detected.

T-5 -14-T

## CONTINUENT LOADING TO RIVER DUE TO MORISOWAL FLOW AT INTERMEDIATE SOME IN SITE R\*\*\*

10 <b>qu</b> 0:	001,T01	995'18-	166'1	11.61-	•••	16.2-			QH .			Q#	
-							an					GM	
3 <del>0 (  10</del> 0 )	00L, F01		964.0	25.TS	011.1	69.61	OH		GN	***			
10 <b>q</b> 0;	901,101	951,16-	966'9	60.05-	955,5	16.91-	<b>CM</b> .	-+	Qs			G#	
1 odno 5	103,700	168,60-	966'9	61.60-	****	37, 65-	an		CHE			GM	~-
Jone	001,T01	£60,10-	044'0	CO. 99-	****	14.55-	de		QM			GM	
A	401,761	-43,003	966'8	59.65-	499'8	99'11-	gu		GM	-		GM	
•	447,761	166,61-	966'8	66.4-	****	£6.9-	an		GH.			<b>dn</b>	
	004,701	990'06	066'8	96.91	444,4	+6.4	da		ga			GM	
11	007,T01	E95'0L	966'9	19.46	****	18.81	<b>0</b> #		<b>GM</b>			Qm	
<b>ų</b> s.	107,700	997'89	966.8	££.8£	****	££.51	OH	~-	GM			<b>GM</b>	
Laura	107,700	149,65-	946'8	£¢.61-	****	72.3-	<b>00</b>		QM			GAR	
AJ ON	996,791	616,45-	166'1	er.11-	499'9	-30.62	de		GR .			OM .	
	( <sub>2</sub> 33)	(4 <del>0</del> 9/ <sub>6</sub> 32)	(3/6a)	(1P\ <del>qe</del> k)	(3/\$a)	(IP/qel)	( <b>1/8</b> n)	{	(3/6n)	( [p\qe% )	River (1b/dey)	(3/ŝn)	( <b>Jp/qu</b>
	Area	Plow Rote Q	Ave. Conc.		Ave. Conc.	EO MINOS	Melghted Ave. Cenc.	to Miver	Melghted Ave. Conc.	te Biver	teading to	Ave. Cenc.	fo Miver
			be 3 dg Late	Suppor	beside tow	Sujperj	Catcinogonic PMA."	Support	Non-Catcinogonic PMAs**	\$21peor	Tetal PRAS	besing Low	Patheol
			**>01										

<sup>.</sup> Lotal Organic Carbon.

Megative alga designates contaminant migration toward the river.

Source: Scology and Environment, Inc. 1988.

<sup>..</sup> Polymuclest Aremetics.

<sup>...</sup> pero competentad nelle entito entito entito decembery à Millor 1986; 1986s) nere used to calculate

nejåpjed svernge concentrations.

mb met betected.

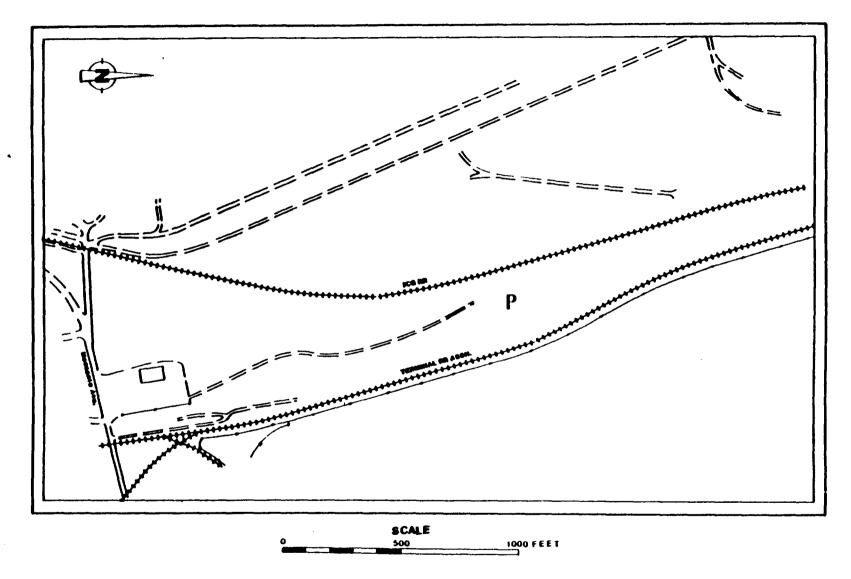
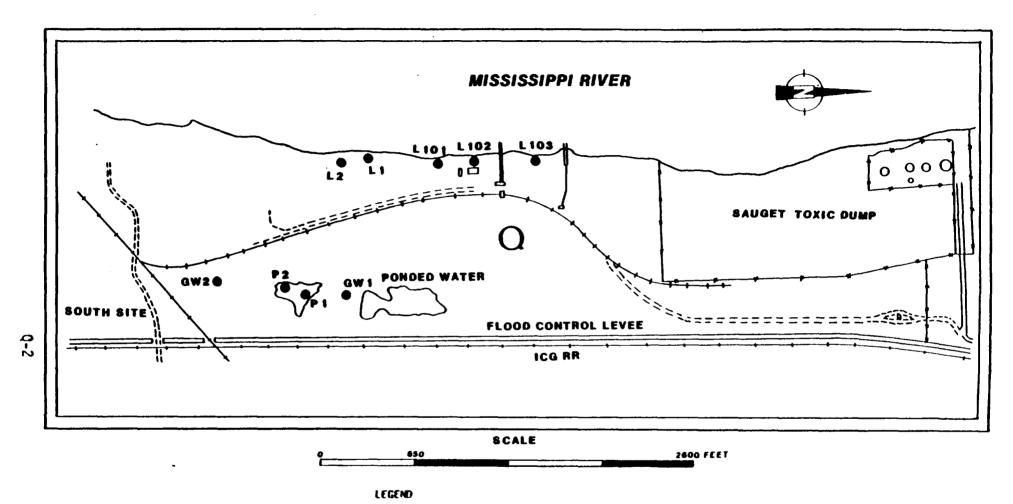
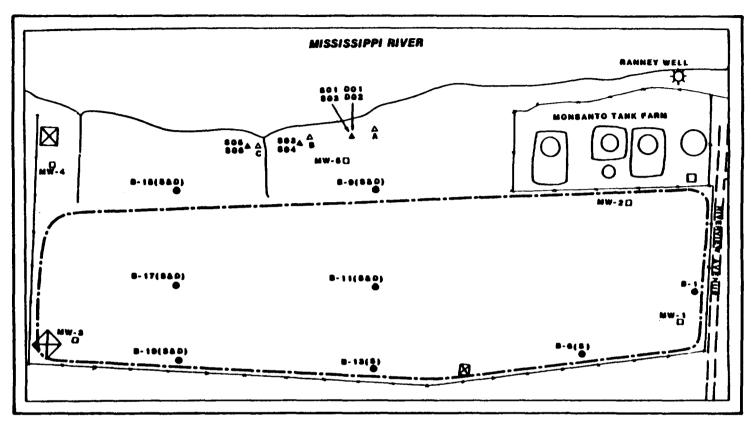


FIGURE P-1 DEAD CREEK SITE AREA P



ON1 TEPA CROUNDWATER SAMPLING LOCATION
P1 TEPA SURFACE WATER SAMPLING LOCATION
L1 TEPA LEACHATE SAMPLING LOCATION

FIGURE Q-1
DEAD CREEK SITE AREA Q WITH SAMPLING LOCATIONS



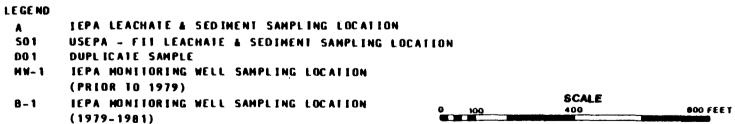


FIGURE R-1 STATE AND USEPA SAMPLING LOCATIONS AT SITE R.

TABLE Q-1: ANALYSIS OF SURFACE AND GROUND WATER SAMPLES COLLECTED BY IEPA AT SITE Q

SAMPLE LOCATIONS AND DATES

<del></del>	SALIFEE EGOALIONS AND DATES						
PARAMETERS	P-1	7/72 L-1	1-17 GW-1	<u>-73</u> GW-2	4-10-73 P-2	4-26-73 P-3	
Calcium	80	56	310	137	250	280	
Magnesium	8	26	57	205	42	44	
Sodium	8 23	169	275	13	230	205	
Potassium	6	30	10	4	85	70	
Ammonia	0.19	21	NA	NA.	32	36	
Boron	7	6.5	NA	NA NA	2.6	2.8	
Cadmium	•	0.5	0.02	n/s	NA NA	0.02	
Chromium (Total)	<del></del>		0.02		NA NA	0.03	
Copper		0.01			0.02		
Iron		46			60	67 <sup>-</sup>	
Lead		0.02			0.07	0.07	
Manganese		0.02			6	6.5	
	0.5	0.5					
Mercury (ppb)	0.5	0.5			0.4	0.6	
Nickel		<del> </del>	0.01		0.3	0.2	
Silver		0.2	0.01	0.1	4.2	-	
Zinc	AC	0.2	CAC	0.1	4.2	5	
Alkalinity	46	810	645	375	420	005	
Chloride	19	4	310	24	210	205	
Nitrate	NA	NA	NA	NA	NA	_	
Phosphate	NA	NA	NA	NA	3.7	5	
Sulfate	230	18	325	25	350	270	
Hardness	240	560	NA	NA	970	<b>9</b> 30	
Phenols	NA NA	NA	0.02		NA NA	NA	

NOTE: All results in ppm unless noted otherwise.

Blanks indicate below detection limit.

NA indicated parameter not analyzed.
P = Ponded water, L = Leachate, GW = Groundwater

TABLE Q-2: ANALYSIS OF LEACHATE SAMPLES FROM SITE Q (COLLECTED OCTOBER 28, 1981 AND SEPTEMBER 29, 1983 BY IEPA)

SAMPLE LOCATIONS AND DATES

<b></b>		SAMPLE L	OCATIONS	AND DATES	
PARAMETERS	L-1	L-2	L101	9-29-83 L012	L103
Alkalinity Ammonia Arsenic Barium Boron	255 3.8 0.057 0.8 5.8	293 2.8 0.022 0.2 5.6	191 6.5 0.11 0.5 37.5	158 4 0.034 0.4 42	242 3.7 0.012 0.3 23
Cadmium COD Chloride Chromium (Total) Copper Cyanide	445 15 0.08 0.2	35 17 0.04	87 23 0.03 1.2	94 22 0.01 0.06 0.01	71 31 0.01
Hardness Iron Lead Magnesium Manganese	1330 207 0.26 145 7.7	1220 17.5 67 34	86 0.13 81 6.7	1360 36 0.08 73 6.8	1045 6.4 0.02 44.5 2.7
Mercury Nickel Nitrate Phosphorus Potassium R.O.E.	0.3 0.24 6.1 16.5 1980	0.4 0.74 9.5 1829	0.1 0.21 3.1 13.4 1880	0.1 6.1 1.3 13.5 2118	1.8 0.86 17 1563
Silver Sodium Sulfate Zinc Phenol PCBs (PPB)	0.02 55.7 1196 1.2 0.005 0.7	0.01 53.3 1059 0.2 0.005	0.01 56 1200 0.3 0.5	70 1350 0.2	51 900
2,3-D(PPB)			1		

NOTE: All results in ppm unless noted otherwise. Blanks indicate below detection limits.

TABLE Q-3: ANALYSIS OF FLYASH USED AS COVER FROM STOCKPILES AT SITE Q (SAMPLED BY IEPA IN 1972)

## SAMPLE NUMBERS AND DATES

<u> </u>	<del></del>					<del></del>
		8/3/72			10/16/72	
PARAMETERS	5 Years	1 Year	Fresh	5 Years	1 Year	Fresh
Calcium	125	245	285	580	120	130
Magnesium	4.6	6.4	0.5	9	2	
Sodium	10 <sup>-</sup>	7.5	58	140	1.3	36
Potassium	7	11	79	56	2	45
Ammonia	1.8	0.36	0.47	0.75	0.05	0.15
Arsenic	NA	NA	NA			0.02
Barium	0.1		0.1			
Boron	0.9	3.6	1.8	1.3	0.6	2.4
Cadmium	0.01	0.01	0.02	0.02		
Chromium				0.03		
Copper	0.09	0.01	0.01	0.06		
Iron	1.3	0.1		0.85	0.1	
Lead	0.03			0.02	0.01	0.02
Manganese	0.69	0.03	0.03	0.75		
Mercury (ppb)	6			6.2		
Nickel	0.1	0.1	0.2	0.12	0.05	0.05
Silver	0.005	0.005	0.005			
Zinc	0.8	0.1		1.05	0.05	0.02
Alkalinity	140	65	120	120	80	135
Chloride	10	12	60	150	4	49
Flouride	0.2	0.2	0.1	0.3	0.3	0.2
Phosphate	NA	NA	NA	1.6	0.07	0.05
Sulfate	290	950	1300	1600	250	270
Hardness	420	1000	1400	1600	340	350
COD	250	33	52	460	26	45

NOTE: All results in ppm unless noted otherwise. Blanks indicate below detection limit. NA indicates parameter not analyzed.

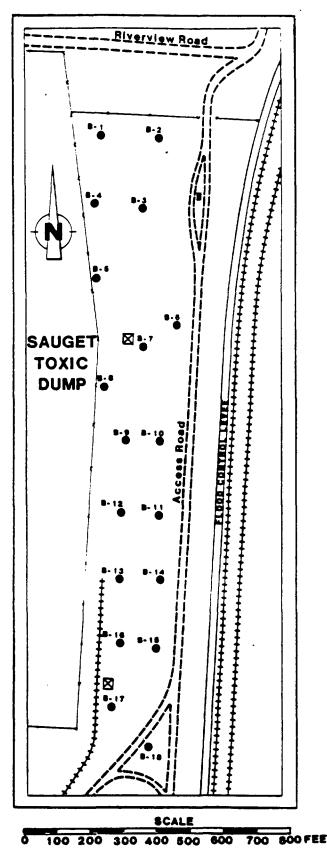


FIGURE Q-2 USEPA  $\pm$  FIT SUBSURFACE SOIL SAMPLING LOCATIONS AT SITE Q

# TABLE Q-4: IDENTIFIED ORGANIC COMPOUNDS IN SUBSURFACE SOIL SAMPLES FROM SITE Q (SAMPLES COLLECTED JULY 13, THROUGH JULY 20, 1983 BY ECOLOGY AND ENVIRONMENT, INC.)

	BORING/SAMPLE NUMBER DEPTH (in Feet)							
	BIA	818	B2A	125	83A	8.76	844	846
PARAMETERS	10.0-11.5	17.5-19.0	13.5-15.5	17.0-19.0	10.0-12.0	13.5-15.5	10.0-12.0	13.5-15.
2,3,7,8-1000	2,500	170,000	22,000	520	1,400	1,500		3, 31
2,4,6-trichlorephenol	2, 900 24, 000	45,000	800	720	1,500	1, 500 LT	57 000	94,000 360,000
2-chlorophenol 2.4=dichlorophenol	66,000	3, 100, 000	31,000	1700	760	4, 500	57, 000	370,000
2,4-dimethyphenal	<b>45,</b> 000	J, 100, 000	500	1700	700	4, 200		72,000
4,6-dinitro-2-esthylphenal			~~					72,000
gentachlorophenol		86,000	5, 400	LT ·		11,000		100,000
phenol	24,000	55,000	45,000	4,400	3,200	100,000	99,000	88.000
2-methylphonoi-	1						13,000	
4-methylphenol			LT		560	LT		330,000
2, 4, 5-trichlorophenol				LT				,
ecenaphthene			1,200	2,800				
1,2,4-trichlorobenzene				440			LT	100,000
1,2-dichlorobenzene	LT		LT			LT		20,000
1,4-dichlorobenzene			1,800	720	UT	760	LŤ	66,000
fluoranthene				1,200				LT
1 eacharane								
nepthelene			11,000	8, 300				LT
nitorbenzene		8, 800	400					56, 000
N-nitromodiphenylamine				_				
bis(2-ethylhexyl)phthelste				LT				62,000
butyl benzyl phthelete								
di-n-butyl phtheiste	LŤ							LI
di-n-octyl phthelate								
diethyl phthelate								
benzo(a)anthracene								
benzo(a)pyrene								
benzo(b)fluorenthene								
benzo(k)fluoranthene				400				
chtysene				400				
enthracene								
benzo(gh1)perylene			/00	3,000				
fluorene			600 1,000	2, 700				LT LT
dibenza(e,h)enthrerene			1,000	2, 700				C1
indens(1,2,3-cd)phrane								
DYTONE			LT	LŤ				LŤ
analine								Ç.
4-chloreniline			LT					
dibenzofuren			1,000	3,000				
2-esthylpapthalene			2,000	2,300				
3-nitroeniline			4,600	*,,,				
benzene			٠, ۵۵۰					
Dhlorobenzene							10,000	40,000
1.2-dichlorosthens							10,000	٠,٠٠٠
1.1-dichloroethene		•						
1,1,2,2-tetrachloroethene								
1.2-trans-dichloroethens								
ethylbenzene								
methylene chloride			7.4	3.7	LM	6.0		
tetrachloroethene								
tolume								
trichloroethene								
ecetone			960			977		UI
2-but shane								
4-sethyl-2-pentanone						LT		
atyrene								
0-xylene				2.0				5, 100
PC8-1242								
PCB1254								
PCB-1248	1,000							
PCB-1260	-		465.2		69.6			
PCB-1016			2, 120. 6					
Total PCB			•				68,000	1,000,000

NOTE: All results in ppb.

LT = Present, but lower then the detection limit for low hazard enalyses.

UN = Present, but lower then the detection limit for medium hazard enalyses.

P= The sample could not be cleaned up sufficiently to yield TCDD results.

NA = Not enalyzed, sample could not be cleaned up sufficiently.

Blank = not detected.

# BORING/SAMPLE NAMBER

BSA   BSB   B6A   B4B   B7A   B7B   B8A   B7B	0, 1 0 10, 00 0 64, 00 0
2,3,7,8-TCDD 2,4,6-trichlorephenol 130,000 26,000 2,700 4,800 2,700 480,000 2-chlorephenol 31,000 8,400 1,600 LT 2,4-dichlorephenol 360,000 260,000 17,000 15,000 6,100 1,500,000 4,6-dinitro-2-eacthylphenol 2,000 4,6-dinitro-2-eacthylphenol 140,000 250,000 45,000 11,000 1,800 2-eacthylphenol 1,400 600 4-eacthylphenol 2,4,5-trichlorephenol 2,4,5-trichlorephenol 36,000 13,000 1,400 2-eacthylphenol 2,4,5-trichlorephenol 36,000 13,000 1,400 2-eacthylphenol 2,4,5-trichlorephenol 36,000 13,000 LT 1,2-dichlorephenol 36,000 13,000 LT 1,8-dichlorephenol 1,2-dichlorephenol 31,000 13,000 LT 1,8-dichlorephenol 31,000 13,000 LT 1,8-dichlorephenol 100,000 28,000 LT 1,8-dichlorephenol 100,000 100,000 100,000 LT 1,8-dichlorephenol 100,000 LT 1,8-dic	0, 1 0 10, 00 0 64, 00 0
2, 4, 6-trichlorephenol 130,000 26,000 2,700 4,800 2,700 480,000 2-chlorephenol 31,000 8,400 1,600 LT 2, 4 adichlorephenol 560,000 260,000 17,000 15,000 6,100 1,500,000 2, 6-dimethyphenol 2, 6-dimethyphenol 2, 000 4, 6-dimethyphenol 2, 000 4, 6-dimethyphenol 2, 000 4, 6-dimethyphenol 31,000 250,000 45,000 11,000 1,800 25,000 31,000 2-methylphenol 36,000 7,000 11,000 1,800 31,00	10 10,000 10 64,000
2-chlorophenol 31,000 8,400 1,600 1,600 LT 2,4=dichlorophenol 560,000 260,000 17,000 15,000 6,100 1,500,000 2,4=dimethyphenol 2,000 4,6=dimethyphenol 16,000 25,000 31,000 phenol 16,000 25,000 31,000 phenol 140,000 250,000 45,000 11,000 1,800 2-centhylphenol 36,000 7,000 1,400 2,4,5=trichlorophenol scenaphthene 1,2,4=trichlorophenol 86,000 13,000 LT 180,000 1,4=dichlorobenzene 100,000 28,000 LT 180,000 1,4=dichlorobenzene 100,000 28,000 LT 180,000 1,4=dichlorophenol scenaphthene 1,2,4=trichlorophenol 5,100 800 Filiparame 100,000 15,000 LT 180,000 Filiparame 100,000 Filiparame 100,000 LT 180,000 Filiparame 100,000 Filiparame 100,000 LT 180,000 Filiparame 100,000 Filipa	10 64,000 10 10
2, assichiorophenol 360,000 260,000 17,000 15,000 6,100 1,500,000 2,4-disethyphenol 2,000 4,5-disethyphenol 2,000 4,5-disethyphenol 2,000 16,000 25,000 31,000 phenol 140,000 250,000 45,000 11,000 1,800 25,000 31,000 250,000 11,000 1,800 250,000 1,000 1,000 1,000 250,000 1,000 1,000 1,000 250,000 1,000 1,000 250,000 1,000 1,000 250,000 250,000 1,000 250,000	10
2,4-disethyphenol	10
4,6-dinitro-2-methylphenol pentachlorophenol phenol phenol 140,000 250,000 45,000 11,000 25,000 31,000 2-methylphenol 1,400 600 4-methylphenol 36,000 7,000 1,400 2,4,5-trichlorophenol 2,4,5-trichlorophenol 36,000 13,000 1,000 1,200 1,20,001 1,2,4-trichlorobenzene 1,2,4-trichlorobenzene 100,000 28,000 LT 180,000 1,4-dichlorobenzene 100,000 28,000 LT 180,000 1,4-dichlorobenzene 100,000 28,000 LT 3,000 100,000 800 7100 800 7100 800 71000 800 710000 800 710000 800 710000 800 710000 800 710000 800 710000 800 800 710000 800 800 800 800 800 800 800 800 80	
pentachlorophenol   16,000   25,000   31,000   31,000   250,000   11,000   1,800   250,000   31,000   11,000   1,800   250,000   11,000   1,800   250,000	
Phenol   140,000   250,000   45,000   11,000   1,800	
2-methylphenol- 4-methylphenol 34,000 7,000 1,400 2,4,5-trichlorophenol scenaphthere 1,2,4-trichlorobenzene 84,000 13,000 LT 180,000 1,2-dichlorobenzene 100,000 28,000 LT 180,000 1,4-dichlorobenzene 3,100 800 7 1/4-dichlorobenzene 120,000 LT 3,000 S00 7 1/4-dichlorobenzene 120,000 S00	
4-methylphenol 36,000 7,000 1,400 2,4,5-trichlorophenol acemaphthene 1,2,4-trichlorobenzene 86,000 13,000 LT 120,000 1,2-dichlorobenzene 100,000 28,000 LT 180,000 1,4-dichlorobenzene 5,100 800 1,000 100,000 100,000 LT 10	
2,4,5-trichlorophenol scenaphthene 1,2,4-trichlorophenzene 84,000 13,000 120,000 120,000 1,2-dichlorophenzene 100,000 28,000 LT 180,000 1,4-dichlorophenzene 5,100 800 1100,00	
acemephtheme 1,2,4-trichlorobenzeme 1,2,4-dichlorobenzeme 1,2-dichlorobenzeme 100,000 28,000 LT 1,4-dichlorobenzeme 3,100 800 Fluorantheme 180phorome mapthaleme LT 800 LT 380,000	
1,2,4-trichlorobenzene 86,000 13,000 120,000 1,2-dichlorobenzene 100,000 28,000 LT 180,000 13,100 800 71,000 800 71,000 800 71,000 800 71,000 800 800 800 800 800 800 800 800 800	
1,2-dichlorobenzene 100,000 28,000 LT 180,000 1,4-dichlorobenzene 3,100 800 Fluoranthene 180phorone napthalene LT 800 LT 380,000	
1,4-dichlorobenzene 3,100 800  // Discreption	
fluorantheme Leophorone nepthalene LT 800 LT 380,000	0 11
Leophorone hapthalene LT 800 LT 380,000	<b>0</b> 41
napthalene LT 800 LT 380,000	<b>n</b> 11
	10 (1)
nitorbenzene 27,000 11,000 L7 52,000	
	O
N-nitrosodiphenylamine	
bis(2-ethylhexyl)phthalate	
butyl benzyl phthelete	
di-n-butyl phthalate 400 LT	
di-n-octyl phtheiete	
diethyl phtheiste	
penzo(a)anthracene	
benzo(a)pyrene LT	
benzo(b)/Tuprenthene LT	
benze(k)fluorenthene	
chrysene LT	<del></del>
anthr acone	
benza (ghi) perylana	
fluorene	
plenantrene	
dibenzo(e,n) anthracene	
andeno(1,2,3-cd)phrane	
pyrene	
priore	
#-chlorenline 9,000	
dibenzofuren	
2-eathylnapthelene	
3-nitroeniline	
	100
, , , , , , , , , , , , , , , , , , , ,	100
1,1-dichloroethane	
1,1,2,2-tetrachloroethane	
1,2-trane-dichloroethene	
athylbenzene 44,000 3.8 4.5	
<del>,</del>	LT
etrachloroethene Lf	
50,000 LT 6.1	
trichloroethene LT	
cetone 330 200 2,600	
?-butanone LT LT LT	
4-exthy1-2-pentanone	
styrene	
0-xylene 140,000 13.0 LT 22.0	
	700 2,7
PCB1254 60,000	
PCB-1246 4,700	
•	980 1,5
PCB-1016 2,300 46,000	
Total PCB 66,000	

All results in ppb.

LT = Present, but lower than the detection limit for low hazerd enalyses.

LM  $\pi$  Present, but lower than the detection limit for medium hexard enalyses.

P = The sample could not be cleaned up sufficiently to yield TCDD results.

NA = Not enalyzed, sample could not be cleaned up sufficiently.

Blank = Not detected.

TABLE Q-4 (Continued)

## BORING/SAMPLE MUMBER

	DEPTH (in feet)							
							[	
	874	178	81QA	8108	811A	8118	B12A	B129
PARAMETERS	15.0-17.0	17.0-19.0	17.0-19.0	19.0-21.0	17.0-19.0	19.0-21.0	17.0-19.0	19.0-21.
2, 3, 7, 8-1000					,			
Z. 4. ←trichlorephenol	LT	600	46,000	<del>64</del> 0			4, 400	7, 400
Z-chlorophenal	640	1,100	1,700	LT			1,200	520
I, Amdichierophenel	7, 400	9, 800	170,000	9, 60	3, 200	20,000	8,800	4,200
Z. 4-dusethyphenol		LT						
4,6-dinitro-2-esthylphenol								
per-achierophenol		4, 800		2, 200			24,000	720
preval	7,500	14,000	32,000	11,000	6,200	37,000	17,000	7,500
2-exthylphonol-								
4-cethylphenol	1,400	2,300	2,700				1,000	720
2.4.5-trichlorophenol							-	
acenephthene								
1, 2, 4-trichlorobenzene			11,000					
1,2-dichlorobanzene			11,000		LŤ			800
1,4-dichlorobenzene		LT	27,000		ĹŤ			1,000
C aprenthene							<del></del>	
1 acquarant					17,000	LT		720
nepthalane			6,500		72,000	35,000	LT	640
ur_orpersaus			•, ~~		72,000	22,000	21	•=0
						LT	. •	
h-mitrosodiphenylamine	440				52,000	34,000	LT	
bis 2-ethylhexyl)phthelate	•				•	34,000	AAO	
but v1 benzyl phthelete		1 100						
di butyl phthelete		1,500	LT		23,000	LT		
d1octyl phthelete								
diethyl phthelete	LT	840						-
berzo(s)enthrecene								
ber-23(8)pytone								
beruzo(b)fluorenthene								1,000
berzo(k)fluorenthene								1,000
cutivaeue					6, 400			
entife scene								
benzo(ghi)perylene								
fluorene								
prementhrane					5, 200			
dibenzo(a,h)anthracene								
indeno(1,2,3-cd)phrene								
pyrene					5, 400			
and ine								
4-coloreniline								LT
dabenzo furen								
2-methylnepthelene					10,000			_
3-mitroeniline					,			•
berzene			UH					
Chi probenzene			5, 200		UI			
1,2-dichlargethene			-,		_			
1,1-dichleroethene								
1,1,2,2-tetrachloroethane								
1, I-trans-dichloroethene								
e לייל lbenzene			6, 500		220, 000			
er-ylene chloride	3.3	200	8,700	LT				
terachloroethene			130,000		1, 300, 000	100,000		UH
teluene trimhloroethene			,		42,000	100,000		
	210	14,000		4, 400				
		-,		·, <del></del>				
acetone 2-but anone							LT	
2-but anone							L 1	
2-butanone 4-exthy1-2-pantanone	·		30,000		650,000	70,000		U
2-but anone 4-earthyl-2-pentenone styrene 0-sylene PCB-1242	600		MA		650,000	70,000		Ui
2-but anone 4-exthyl-2-pentenane styrene 0-milene PCB-1242 PCB1254	·		MA MA		·	-•		- iu
2-but anone 4-earthyl-2-pentenone styrene 0-sylene PCB-1242	·	1,300	MA	120	650, 000 36, 000 45, 000	70,000 70,000 681,000	7,000	UH 5,000

All results in ppb. L' x Present, but lower then the detection limit for low hazard analyses. UP x Present, but lower than the detection limit for medium hazard analyses. P x The sample could not be cleaned up sufficiently to yield TCDD results. RA x Not analyzed, sample could not be cleaned up sufficiently. Slank x Not detected.

### BORING/SAMPLE NUMBER

Depth (in feet) 81 3A 0E 10 815A 817A 17.0-19.0 PARAMETERS 17.0-19.0 19.0-21.0 19.0-21.0 24.0-26.0 22.0-24.0 22.0-24.0 22.0-24.0 2. 3. 7. 8-TCDO 4, 600 1, 900 2, 4, 6-trichlorephenal 20,000 800 7, 700 4,400 2-chlorophenol 2, 500 3, 800 600 1,400 4, 600 100,000 7, 400 11,000 460,000 11,000 27,000 120,000 2, 4=dichlorophenol 680 2.4-dimethyphenal LT 4. 6-dinitro-2-esthvlahenol 12,000 44,000 12,000 14,000 14,000 4,200 pentachlorophenol 39,000 26,000 phenol 8,900 15,000 6,000 13,000 16,000 50,000 2-asthylphenol-720 1,400 1,000 4-sethyl phonol 16,000 1.900 9, 200 2.4.5-trichlorophenol LT ec en acht hane 13,000,000 1, 2, 4-trichlorobenzene 2, 400 3,000 2,000,000 620,000 55,000 1, Z-dichlorobenzene LT 1,300 2,000 1,200,000 100,000 1,600 1,4-dichlorobenzene 4,100 fluoranthene 14,000 1 epoho rone LŤ 210,000 napthalane 20,000 720 2,000 n i torbenzene N-nitrosodiphenylamine 400 bis(2-ethylhexyl)phthelste 1,100,000 220,000 4, 600 butyl benzyl phthelete 900,000 LŤ 49,000 LĪ 3, 600 di-n-butyl phthelate LT di-n-octyl phthelate disthyl phthelate LT penzo(a)anthrecens benzo(a)pyrene 1, 300+ henzo(h)flurorenthene 1,300+ benzo(k)flurorenthene enthrecens 880 benzo(ghi)perylene fluorene nhan enthrana LT dubenzo(a.h)anthracene indena(1,2,3-cd)phrene L.T. PYT CO en il ine LŤ 2, 200 9, 600 a-chipreniline dibenzo (uz en LT 2-asthylnasthalane 3-nitroeniline 44,000 benzene UN Chi atabenzene 1.2-dichloroethene 19,000 1.1-dichleroethene 5, 700 1.1.2.2-tetrachlorgethene 11,000 1.2-trans-dichloroethene 790,000 330,000 ethylbenzene LT methylene chloride 50.0 13.0 5,800 23.0 . . tetrechloroethene 12,000 talumne 2, 400, 000 540,000 55,000 trachloroethene 90.0 430 540 1,400 ecetone 2-but anone 250,000 LT 4-methyl-2-pentanone 64.000 styrene 2, 300, 000 1,400,000 LT 0-sylene PCB-1242 5,000 PCB 1254 PC8-1246 PCB-1260 770 2, 900, 000 16,000,000 370 68.0 190 1,000 210 PCB-1016 Total PCB

All results in ppb.

LT a Present, but lower than the detection limit for low hezerd enalyses.

LH - Present, but lower than the detection limit for endium hezard analyses

P = The emple could not be cleaned up sufficiently to yield TCDD results.

NA = Mot enalyzed, sample could not be cleaned up sufficiently.

<sup>81</sup> mnk = Not detected.

TABLE Q-4 (Continued)

BORING/SAMPLE MUMBER

				Depth (10		_	
PARAMETERS	8178 24.0-26.0	818A 22.0-24.0	8166 24.0-26.0	Blank 1	Blank 2	Spales 61.0 ppb 0.37	Spike 61.0 ppb
2,3,7,4-1000				<del></del>		0.37	61.0 ppb 0.9
2,4,6-trichlorephenol							
2-chlorophenol							
2,4=dichlorophenol	3,800						
2,4-dimethyphenel							
4,6-dinitro-2-eethylphenol							
pentachlorophenol							
phenal							
2-esthylphonol-		······					
4-esthylphenol							
2,4,5-trichlorophenal							
ecenaphthene							
1,2,4-trichlorobenzene							
1,2-dichlorobenzene	1						
1,4-dichlorobenzene	550		LŤ				
fluoranthene					1,000		
1 apphotone							
napthalene							
nitorbenzene							
N-nitrocodiphenylamine							
bis(2-ethylhexyl)phthelate	580	910	1,400	LT			
	700	,,,	1,400	Ci			
butyl benzyl phthelete							
di-n-butyl phthalate			· ·				
di-n-octyl phthalate		LT					
diethyl phthalate							
benzo(e)enthrecene		520			600		
benzo(a)pyrene					LT.		
benzo(b)flu		LT			ĹŤ		
benzo(k)fluoranthene		ĹŤ			LT		
cut Assus		640			340		
					700		
anthracane							
benzo(ghi)perylene							
fluorene							
phenanthrene					720		
dibenzo(a,h)anthrecene							
indeno(1,2,3-cd)phrene							
DYTERE		LT			800		
enalane	51,000	1,700					
4-chloraniline	21,000	960					
		, <del>, , ,</del> ,					
d1pen20 fur en		,					
2-esthylnepthelene							
3-nitroeniline							
benzene							
Chlorobenzene	4,1						
1,2-dichloroethene							
1.1-dichloroethane							
1,1,2,2-tetrachloroethane							
1,2-trans-dichloroethene							
ethylbenzene	7,7						
		19.0	47.0				
methylene chloride	6.1	17.8	47.8	LH	6.9		
tetrachloroethene							
toluene							
truchloroethene							
acetone	2,000		260				
2-but anone							
4-sethy1-2-pentanone							
styrene							
0-xylene	23.0		·				
	٠.٠						
PCB-1242							
PCB1254							
FCB-1248	_						
PC8-1260	160		2,400		260		
PCB-1016							
Total PCB		670					

All results in ppb. LT x Present, but lower than the detection limit for low hazard energies. LM x Present, but lower than the detection limit for action hazard energies. P x The mample could ot be cleaned up sufficiently to yield TCDD results. MA x Not analyzed, sample, could not be cleaned up sufficiently. Blank x Not detected.

TABLE R-1: A LISTING OF WASTE TYPES AND APPROXIMATE QUANTITIES DEPOSITED AT SITE R AS REPORTED BY MONSANTO

Approximate Annua	Volume (Cubic 1968	Yards) 1972
Still Residues From Distillation of:		
Nitroaniline and Similar Compounds Cresols, Esters of Phenol	1700	94 1140
Chlorophenol, Chlorophenol Ether Aniline Derivatives	1070 1300	774 208
Chlorobenzol Nitro Benzene Derivatives	130 100	13 1190
Phenol Aromatic Caboxylic Acids	1020 1500	
Chlorinated Hydrocarbons		425
By Products Mixed Isomers of Nitrochlorobenzene	1700	- 785
Mixed Isomers of Dichlorophenol Waste Maleic Anhydride	3000 730	1240
Waste Chlorobenzenes and Nitrochlorobenzene	120	
Contaminated Acids and Caustic Waste Sulfuric Acid with Chloropenol Present Waste Caustic Soda with Chlorophenol Present	1500 5300	1395 1760
Waste Solvents		
Waste Methanol Contaminated with Mercaptans Waste Isopropanol (Water and Chlorinated Hydrocarbon)	600 5500	
Miscellaneous Solvents Oily Material	1019 101	
Filter Sludges Spent Carbon or Other Filter Media	600	12
Lime Mud from Nitroaniline Production Gypsum	1000	1195 5600
Obsolete Samples and Sampling Wastes Chlorophenols	72	40
Laboratory Samples Total	208	150 16,021

NOTE: Blanks indicate waste type not reported.

TABLE R-2: ANALYSIS OF GROUND WATER SAMPLES FROM SITE R (COLLECTED AUGUST 22, 1968 BY THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH)

PARAMETERS	MW-1	MW-3	MW-4	MW-5	MW-6
Total Solids (conductivity mmhos) Alkalinity (ppm) Phenol (ppb)	320	300	280	250	500
	172	148	156	124	248
	1220	25	20	15	1200

TABLE R-3: ANALYSIS OF GROUND WATER SAMPLES FROM SITE R (COLLECTED DECEMBER 5, 1972 By IEPA)

		SAMPLE LUCA	110113	
PARAMETERS	MW-1	MW-2	MW-3	MW-5
Calcium	50.2	147	36	49
Magnesium	15.8	36	18	18.5
Sodium	18.5	112	15	18.5
Potassium	3.6	6.7	4.2	3.5
Ammonia	1.5	2	0.65	0.92
Arsenic				
Boron	0.1	0.7	0.1	0.1
Cadmium				
Chromium (Total)				
Copper		0.1		
Iron	2.4	28.2	1.4	8.5
Lead				0.02
Manganese	0.35	0.61	0.12	0.95
Mercury				
Nickel				
Zinc	0.40	1.42	0.21	2.05
Alkalinity	180	430	145	185
Chloride	22	225	22	22
Fluoride	0.2	0.2	0.2	2
Nitrate	0.1	0.3	0.1	0.1
Phosphate	0.003	0.21	0.05	0.34
Sulfate	16	12	29	32
Conductivity (mmhos)	445	1400	390	470
Pheno1s	0.088	0.2	0.007	0.014
011	1	0	I	0
Hardness	200	530	170	200
COD	46	135	3	88

NOTE: All results in ppm.
Blanks indicate below detection limits.

ANALYSIS OF SURFACE WATER SAMPLES FROM WASTE PONDS AT SITE R (COLLECTED JANUARY 18, 1973 BY IEPA) TABLE R-4:

SAMPLE LOCATIONS

<del></del>	<u> </u>		
PARAMETER	CRYSTALLIZATION POND 221	CRYSTALLIZATION POND 270	SPENT CAUSTIC POND
Pheno1	2800	50,000	2,000

NOTE: Results in mg/l (ppm).

TABLE R-5: ANALYSIS OF GROUNDWATER SAMPLES FROM SITE R (COLLECTED FEBRUARY 22, 1973 BY IEPA)

·	<del></del>			<del></del>	
PARAMETERS	- MW-1	MW-2	MW-4	MW-5	RANNEY WELL
Iron	6.8	11	0.8	6.6	1.9
Manganese	0.35	0.55	0.05	1.05	0.92
Mercury (ppb)	0.4			0.2	
Zinc	1.9	0.6		1.5	
Ammonia	1.6	2.6	0.7	1.3	0.98
Phenol (ppb)	150	80			7500
B00	31	48	1	1	85
COD	51	78	16	13	220

NOTE: All results in ppm unless noted otherwise. Blanks indicate below detection limits.

TABLE R-6: ANALYSIS OF GROUND WATER SAMPLES FROM SITE R (COLLECTED MAY 6, 1974 BY IEPA)

			3/4/1 6	L LOCATIONS		
PARAMETERS	MW-1	MW-2	MW-3	MW-4	MW-5	Ranney Well
Arsenic	0.001	0.001	0.005		0.001	0.002
Barium	0.1	0.3	0.2	0.1	0.2	0.2
Boron	0.3	0.9	8.4	0.2	0.1	
Cadmium		0.02				1
COD	44	990	21	14	17	340
Chloride	90	215	30	<u>1</u> 7	16	25
Cyanide		0.008				0.005
Iron	15	43.2	11.9	2.71	7.5	2.65
Lead	0.008	0.01		0.008	0.014	0.95
Manganese	0.69	1.4	1.1	0.2	0.9	0.95
Nitrate						0.4
011	4	7	1			5
Phenois	0.35	120	0.1	0.02	0.1	15
R.O.E.	720	1600	750	270	240	820
Selenium						
Sulfate	220	78	305	48	41	31

NOTE: All results in ppm.

Blanks indicate below detection limits.

TABLE R-7: ANALYSIS OF GROUND WATER SAMPLES FROM SITE R (COLLECTED OCTOBER 28, 1975 BY IEPA).

PARAMETERS	RANNEY WELL	MW-2	MW-4	MW-5
mmonia				
Arsenic	0.002		0.002	
Barium	0.1	0.1	0.1	0.2
Boron	0.7	0.9	0.5	0.2
Cadmium				
COD	345	210	12	16
Chloride	110	200	23	20
Cyanide		0.02	0.01	
Iron	4.5	13.4	1.45	11
Lead	0.02		0.01	0.04
Manganese	1.3	0.2	0.1	0.7
Nitrate		0.3	0.2	0.1
011	3	6	2	3
Pheno1	19	1.1	0.025	0.013
R.O.E.	300	920	230	200
Selenium	0.02			
Sulfate	95	6	22	15

NOTE: All results in mg/l, (ppm).
Blanks indicate not detected.

TABLE R-8: ANALYSIS OF GROUNDWATER SAMPLES FROM SITE R (COLLECTED FEBRUARY 17, 1976 BY IEPA)

PARAMETERS	MW-1	MW-2	MW-3	MW-4	MW-5	RANNEY WELL
Arsenic						0.001
Barium				0.2	0.3	0.1
Boron	0.3	0.8	8	0.5	0.1	1.4
Cadmium						
COD	28	130	8	16	. 15	390
Chloride	60	410	65	35	35	250
Cyanide	0.01	0.01	0.01	0.01	0.01	0.01
Iron	5.1	19.5	4.3	0.7	7.1	4.6 -
Lead	0.01	0.02			0.02	
Manganese	0.27	0.27	0.1	0.1	0.85	1.45
Nitrate	0.8	0.1				0.3
Phenols	0.03	0.01				
ROE	370	890	260	220	260	900
Selenium						
Sulfate	110	20	100	44	36	180
PCBs (ppb)						7.7

NOTE: All results in mg/l (ppm) unless noted otherwise. Blanks indicate below detection limits.

TABLE R-9: ANALYSIS OF GROUNDWATER SAMPLES FROM SITE R (COLLECTED BY IEPA ON OCTOBER 12, 1979)

8-9\$	B-9D	8-130	B-15S	B-17S	B-19S		
	0.004		0.002	0.002	0.007		
0.02		0.01			0.01		
0.03		0.04			0.03		
1.2	0.32	0.87	0.14	0.42	1.6		
290	100	130	56	110	230		
0.2		0.3		0.1	0.2		
31	10	27	83	11	28		
7.8	1	1.4	1.8	0.99	2.8		
0.6	0.2	1.9	0.1	0.1	0.2		
3.3	0.36	3	0.4	0.52	0.87		
			*	*	*		
*	*				0.81		
70	40	10	0.34	11	18		
					1.6		
				0.32	2.1		
21	56	10	14.3	41.5	22		
	0.01 0.02 0.03 1.2 290 0.2 31 7.8 0.6 3.3	0.01 0.004 0.02 0.03 1.2 0.32 290 100 0.2 31 10 7.8 1 0.6 0.2 3.3 0.36	0.01       0.004       0.002         0.02       0.01         0.03       0.04         1.2       0.32       0.87         290       100       130         0.2       0.3         31       10       27         7.8       1       1.4         0.6       0.2       1.9         3.3       0.36       3	0.01     0.004     0.002     0.002       0.02     0.01     0.04       1.2     0.32     0.87     0.14       290     100     130     56       0.2     0.3       31     10     27     83       7.8     1     1.4     1.8       0.6     0.2     1.9     0.1       3.3     0.36     3     0.4    *  70  40  10  0.34	0.01       0.004       0.002       0.002       0.002         0.02       0.03       0.04       0.04       0.14       0.42         290       100       130       56       110         0.2       0.3       0.1         31       10       27       83       11         7.8       1       1.4       1.8       0.99         0.6       0.2       1.9       0.1       0.1         3.3       0.36       3       0.4       0.52         *       *       *         70       40       10       0.34       11		

NOTE: All results in ppm

Blanks indicate below detection limits

\* Contaminants present, but not quantified

# TABLE R-10: ORGANIC ANALYSIS OF GROUNDWATER SAMPLES FROM SITE R (COLLECTED BY IEPA ON MARCH 25, 1981)

# SAMPLE LOCATIONS

		····				<del></del>	<del> </del>		
PARAMETERS	B-1	B-6S	B-9S	<b>B90</b>	B11S	B-11D	B-150	B-170	8-190
Aliphatic hydrocarbons					4,000				
Biphenylamine	1,800	250			15,000	1,100	1,300	860	660
Chlorobenzene	3,000	130	720	810	1,000	2,800	2,800	650	300
Chlorophenol	6,600	5,300	11,000	12,000	13,000	3,200	3,200		950
Chloronitrobenzene			2,500	1,500		<del></del>	<del>-</del>		
Dichlorobenzene	2,600			_	1,000	800	930	420	<b>3</b> 60
Dichlorophenol	1,100	700			•	630	2,900	670	
Trichlorophenol	-						-	1,200	

NOTE: All results in ug/l (ppb).
Blanks indicate below detection limit.

TABLE: R-11: ANALYSIS OF LEACHATE AND SEDIMENT SAMPLES FROM SITE R (COLLECTED OCTOBER 2, 1981 BY IEPA)

	SAMPLE A (WATER)	SAMPLE B (WATER)	SAMPLE C (WATER)	SOIL SAMPLE A	SOIL SAMPLE B	SOIL SAMPLE (
PARAMETERS	0022687	0022688	0022689	D022690	D022692	D022692
PCB	<del> </del>		2.6	48	150	230
Toluene	11	40	150			
Chlorobenzene	160	390	1,600			
Chloroaniline	24,000	22,000	38,000	1,700	190	6,900
Chloronitrobenzene	21,000	9,600	820	-	130	-
2.4-0	16,000	17,000	7,800	53	(<5)	(<5)
2,4,5-1				(<5)	(<5)	(<5)
Dichloronitrobenzene	740	590	790			
Dichloroaniline	870	820	2,800			190
Chloronitroaniline	84	33				
Mitroaniline	100	23				
Chlorophenol	15,000	30,000	27,000			290
Pheno l	22,000	17,000 220	12,000			
Methylphenol	570	220	110			
Dichlorophenol	32,000	7,200	2,100	40		
Mitrophenol	600	-	-			
Biphenyldiol	1,700					
Aniline	550	120	35			
Methylbenzene	180	2,000	140			
Sucponanide						· · · · · · · · · · · · · · · · · · ·
4-methyl-2-pentanol	26					
2-methyl cyclopentanol	93					
Biphenyl 2-01	300	300	280			310
Benzenesulfonamide	76	630				
Dichlorobenzene		110	250			
Benzoic Acid/Derivatives Hydroxybenzoic Acid/	12,000	6,600	2,000			
Derivatives	12.000					

29,000 6,500

48,000 12,000

12,000 38,000 10,000

Derivatives

2,4-B Isomer 2,4,5-T Isomer

NOTE: All results in ppb.
Blanks indicate below detection limits.
( ) indicates values are unconfirmed.

TABLE R-12: COMPILATION OF LEACHATE AND SEDIMENT SAMPLES COLLECTED AT SITE R IN NOVEMBER, 1981

STATION NUMBER	USEPA SAMPLE NUMBERª	MONSANTO SAMPLE NUMBER	DESCRIPTION
1	<b>S01</b>	MO1	Leachate (5% Sediment)
1	DO1		Duplicate for SO1
1	<b>S02</b>	MO2	Sediment
1	DO2		Duplicate for SO2
2	<b>S03</b>	MO3	Leachate (10% Sediment)
2	<b>S04</b>	MO4	Sediment
2 3 3	S05	M05	Leachate (10% Sediment
3	\$06	M06	Sediment
B1 ank	<b>S07</b>		City of Chicago tap water. Blank for low level analysis.
B1 ank	. R01		City of Chicago tap water. Blank for medium level analysis.
B1 ank	RO1		City of Chicago tap water. Extra blank for low level analysis.

NOTE: Monsanto did not split samples where no number is listed. a - Samples collected by Ecology and Environment, Inc.

TABLE R-13: ANALYSIS OF TETRA THROUGH OCTACHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS IN LEACHATE SAMPLES FROM SITE R (COLLECTED NOVEMBER 12, 1981 BY ECOLOGY AND ENVIRONMENT, INC.)

## **PARAMETERS**

SAMPLE LOCATIONS	TCDDs	TCDFs	PCDDs	PCDFs	HXCDDs	HXCDFs	HPCDDs	HPCDFs	OCDDs	OCDF s
S01 S03 S05 S07 (Blank) R01 (Blank)					4.5 6.3 5.8	6.3 10 6.3	86 181 152	74 182 112	323 675 2693	30 103 53

NOTE: All results in parts per trillion (ppb).
Blanks indicate below detection limits.

Analysis performed by Brehm Laboratory, Wright State University.

TABLE R-14: INORGANIC ANALYSIS OF LEACHATE SAMPLES FROM SITE R (COLLECTED NOVEMBER 12, 1981 BY ECOLOGY AND ENVIRONMENT, INC.)

SAMPLE LOCATIONS

				MITEL LU	0,111			
PARAMETERS	\$01	M01	001	S03	M03	\$05	MO5	R01
Arsenic	0.034	0.02	0.031	0.016	0.025	0.029	0.065	
Mercury	0.0002		0.0002	0.0002	0.0014	0.0008	0.001	
Selenium	0.038		0.032	0.026		0.031		
Thallium								
Antimony								
Beryllium		0.008			0.005		0.008	
Cadmium		0.006			0.007		0.008	
Chromium	0.04	0.086	0.02	0.015	0.075	0.02	0.07	0.01
Copper		0.073			0.092		0.08	
Lead	0.005		0.008					
Nickel	0.04	0.155			0.124		0.144	
Silver						0.01		
Zinc	0.048	0.216	0.024	0.01	0.216	0.049	0.062	0.31
Aluminum		26.8			30.5		3.22	
Barium		0.5			0.5		0.36	
Boron	19.7	18	17.1	15.35	13.6	21.6	19.1	
Calcium	N/A	368	N/A	N/A	257	N/A	257	N/A
Cobalt		0.03			0.019		0.031	
Iron	0.06	25.5	0.06	A. / A	30.8	0.63	27.4	/.
Magnesium	N/A	43.2	N/A	N/A	48.2	N/A	39.8	N/A
Manganese	0.02	6.27	0.32	1.99	2.1	5.4	8.82	0.03
Molybdenum	N/A	0.53	N/A	N/A	0.403	N/A	0.439	N/A
Phosphorus	N/A	0.9	N/A	N/A	0.907	N/A	2.06	N/A
Sodium	N/A	40.4	N/A	N/A	41.8	N/A	44.2	N/A
Tin		0.10			0 120	0.02	1.4	
Vanadium Cuanida	0.071	0.18	0.057	AL / A	0.138	N/A	0.17	0.12
Cyanide	0.071	N/A	0.057	N/A	N/A	N/A	N/A	0.13

NOTE: All Results in ppm.

Blanks indicate below detection limits.

N/A - Parameter not analyzed.

RO1 is a water blank.

TABLE R-15: INORGANIC ANALYSIS OF SEDIMENT SAMPLES FROM SITE R (COLLECTED NOVEMBER 12, 1981 BY ECOLOGY AND ENVIRONMENT, INC.)

SAMPLE LOCATIONS

				THE EDUNT	10110		
PARAMETERS	S02	503	M02	S04	MO4	S06	M06
Arsenic	1.1	2.9	5.3	1.25	9.6	1.8	8.2
Mercury							
Selenium	1.1	1.8		1.5		1.6	
Thallium							
Antimony				4.0			
Beryllium			0.412		0.489		1.08
Cadmium			0.747	0.61	1.04		2.49
Chromium			10.7		10.4		28.7
Copper			7.17		7.8 <del>9</del>		25.5
Lead	2.4	2.9		2.45		1.7	•
Nickel			17.4		18.6		33.8
Zinc	9.5	10	29.5	6.8	36.3	9.2	69.4
Aluminum	150	190	3870	155	4380	170	13,900
Barium			75.4		130	20	7.79
Boron		25	53	17	28.7	26	30.3
Calcium	N/A	N/A	3660	N/A	4010	N/A	6590
Cobalt			4.7		4.8		9.45
Iron	580_	660	5870	425	8660	580	12,600
Magnesium	N/A	N/A	1780	N/A	2090	N/A	4080
Manganese	76	46	79.7	42	119	47	273
Molybdenum	N/A	N/A	10.6	N/A	12.5	N/A	22.4
Phosphorus	N/A	N/A	154	N/A	270	N/A	366
Sodium	N/A	N/A	1840	N/A	1270	N/A	4720
Tin							
Vanadium			14.4		17		43.9
Cyanide	28_	13	N/A	6.8	N/A	90	N/A

NOTE: All results in ppm.

Blanks indicate below detection limit.

N/A - Parameter not analyzed.

## TABLE R-16: IDENTIFIED ORGANIC COMPOUNDS IN LEACHATE AND SEDIMENT SAMPLES FROM SITE R (COLLECTED NOVEMBER 12, 1981 BY ECOLOGY AND ENVIRONMENT, INC.)

SAMPLE LOCATIONS

		LEACHATE		}			SEDIMENT		
PARAMETERS	M01	M03	M05	SO2	MO2	<b>S04</b>	HO4	506	M06
2-Chlorophenol	340	100		0.26		0.2	200	0.4	
2.4-Dichlorophenol	100			i .		0.42		0.56	
Phenol	130			)		0.5	300	0.42	300
2.4.6-Trichlorophenol				1				0.32	
1,4-Dichlorobenzene	30			ĺ	200		400		600
1,2-Dichiorobenzene	20								
Bis(2 ethylhexyl) Phthalate				)	400		300		400
Chlorobenzene	160	30		i					
Aniline	60	40	25	i					
Chloroanilines	8000	4000	600	ł					
Dichloroanilines	100	40							200
Chloronitrobenzenes	3000	80		[					
2,4-0	332	100		ł					
PCBs	l		0.008	ļ	0.014		0.034		0.19

MOTE: All results in parts per billion (ppb). Blanks indicate below detection limit.

TABLE R-17: COMPARATIVE ANALYSIS OF CHEMICALS DETECTED IN SAMPLES AT SITE R AND THOSE REPORTED TO HAVE BEEN DISPOSED OR MANUFACTURED BY MONSANTO

	LEACHAT	TE/SEDIMENT A	MALYSIS	GROUNDWATER ANALYSIS	REPORTED DISPOSAL	MANUFACTURED
COMPOUNDS	TEPA	MONSANYO	USEPA	TEPA	MONSANTO	MONSANTO
PCBs	X	X				X
• Chlorobenzene	[ X	X		1 x (	X	X
• Dichlorobenzene	( X	. <b>X</b>		<b>f x f</b>		X
• Chloroaniline	i x	X		ĺ	X	i x
Chloronitrobenzene	į x	X		1 x 1	X	l x
Dichloronitrobenzene	l x			1		
Chlorophenol	XX	Х	X	1 X	X	X
Dichlorophenol	( x	X	X	1 x 1	x	X
2.4-D/isomers	X	X		[ 1		l x
2,4,5,-T/Isoners	S X			[ [		ĺX
* Aniline	X	X		i i		İ
Dichloroaniline	Х _			1	X	
Chloronitroaniline	X				X	X
Nitroaniline	į X			1	X	X
↑ Pheno i	X	X	X	1 x 1	<b>X</b>	
Nitrophenol	X			ľ		
Methylphenol	X			i		i
Diphenyldial	<u> </u>			1		l
Benzoic Acid/Derivatives	X				X	X
4-methyl-2-pentanol	×			1	X	1
2-methylcyclopentanol	Į ×			1	X	l
Benzene Sulfonamide	X			1	X	ł
Chlorotoluene	} ×			1 1	_	X
Dioxins/Dibenzofurans	L		<u> </u>	ll	X (By Product)	X (By Product)

Sauget Sites Area #2

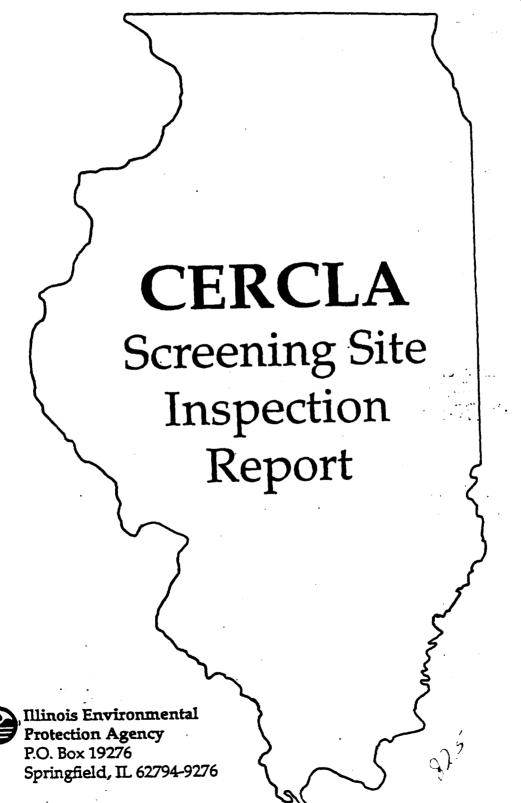
L1631210020/St. Clair Co. - Sauget WWTP (Site 0) ILD000672329 L1631210001/St. Clair Co. - Sauget and Company Landfill (Site Q)

ILD000605790

L1631210003/St. Clair Co. - Sauget Toxic (Site R) ILD980606982 L1631210012/St. Clair Co. - Bliss Waste Oil ILD000665836

L1631210006 St. Clair Co. - Monsanto W.G. Krummrich

ILD000722074



Sauget Sites Area 2

TABLE 4-1

Table

SUMMARY

S
V
e.
S

SAMPLING POINT	X107 06-26-91		X108 06-26-91		X109 06-26-91	L	X110 06-26-91	X111 06-26-91		X112 06-27-91	
PARAMETER											
OLATILES	(ppb)		(ppb)		(ppb)		(ppb)	(ppb)		(ppb)	
Methylene Chloride	40	В	43	В	4	J	5 J	38	B	84	B
Acetone	16		38					180	_		
Carbon Disulfide								15	J		
1,1-Dichloroethane								11	J		
1,2-Dichloroethene(total)								13	J		
Chloroform	5				5	J	4 J			10	
2-Butanone (MEK)					~-			52	J		
1,1,1-Trichloroethane								25	J		
Bromodichloromethane											
Trichloroethene							'				
Benzene	~~		~					14	J		
4-Methyl-2-Pentanone			~					72			
Tetrachloroethene								85			
Toluene	7		~-					210		8	
Chlorobenzene	~-		~-								
Ethylbenzene			~-		~-			210			
Xylene(total)	29							480			
# of TiC's	(2)		(3)		(1)		(1)	(10)		(3)	
SEMIVOLATILES	(ppb)		(ppb)		(ppb)		(ppb)	(ppb)		(ppb)	
1,4-Dichlorobenzene							-~				
4-Chloroaniline						1					
2-Methylnaphthalene	35000		-								
Fluorene	11000	J			~-						
Pentachlorophenol			~-								
Phenanthrene	79000				~-						
Anthracene	6600	J									
Pyrene	75000				~-						
bis(2-Ethylhexyl)phthalate			290	JB	180	JB	390 JB				
Benzo(a) pyrene	16000	J									
# of TIC's	(20)		(20)		(20)		(20)	(20)		(3)	

Table 4-1 (continued)

## Table 4-1 (continued)

Sauget wites Area 2 See CERCLIS for ILD numbers			)	TABLE 4-1 Summary		
SAMPLING POINT	G201 06-27-91	X102 06-26-91	X103 06-26-91	X104 06-26-91	X105 06-26-91	X106 06-26-91
PARAMETER						
PESTICIDES/PCB'S	(qđđ)	(qdd)	(qdd)	(qdd)	(qdd)	(qdd)
OHB-edula	ł	ł	ŀ	!	21	ţ
beta-BEC	1	ļ	!	:	!	1
gamma-BHC (Lindane)	1	1	1	!	:	1
	!		!	ł	!	
	!	}	1	! !		7 7
Heptachlor epoxide	1 1	! !	1 1	! !	۲۶ <u>۱</u>	? !
Endosulran 1			i	!	1	!
Dietarin 4.4'-nnr	1 1	ł	1	:	290	570
Endrin	i	1	1	1	110	1
Endosulfan II	1	<b>!</b>	1	1	89 -	!
4,4'-DDD	1	!	<b>!</b>	l l	0.0°	1 u
4,4DDT	1	ł	i i		200	ה ה
Methoxychlor (Mariate)	i	! ;	! !	1 1	i !	110
Endrin Ketone	; ! ! !	! !	1	ļ	1	1
Aroclor=1242	1	2200	1	1	1	1
Aroclor-1260	!	). [ ]	1	1	1	:
INORGANICS	(qdd)	(wdd)	(wdd)	(wdd)	(wdd)	(wdd)
# T T T T T T T T T T T T T T T T T T T	420	14500	8000	22200	2300	1800
Argenic	1 1	6.7	4.8	4.6	25.3	4.0
Barlum	83	160 1 5	210	120	380	220
Beryllium	<b>!</b>	· · ·	2 !	:	1.1	5.7
Calcium	49600	3260	1	6120	58800	106000
Chromium	!	13	ε. α 	35 1.0	12	57 
Cobalt	1 1	33	7.4	22	47	38
Iron	58	12700	10400	19800	7710	5270
Lead	12	200	11.8	2060	83	4240
Magnesium	006/1	0867	0570	530	78	62
Manganese	<b>!</b>	0 1	31	3 1	0.75	;
Nickel	1 5	19	14	34	27	10
Potassium	3160	2730	1690	2140	280	260
Selenium	0276	1 1	<b>! !</b>		1150	1400
Vanadium	2	37	26	556	117	111
zinc	1 1	190	æ E	100	790	000
Cyanide Sulfate	42000	220	38	190	190	2700
Sulfide	0099	96	1	:	490	330

	Sauget Sites Area 2 See CERCLIS for ILD numbers SAMPLING POINT	X107 06-26-91	X108 06-26-91	x109 06-26-91	X110 06-26-91	X111 06-26-91	X112 06-27-91
	PARAMETER	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
	PESTICIDES/PCB'S	(Pps)	****				
							 27
	alpha-BHC		17				27 29
í	beta-BHC	420					11
	gamma-BHC (Lindane)						23
	Heptachlor	210	8.7				
	Aldrin	270					
	Heptachlor epoxide	48					26
}	Endosulfan I	2000	21				
•	Dieldrin						140
•	4,4'-DDE		20				
i	Endrin	1600	19		<b></b>		***
n.	Endosulfan II	240		19	***		120
	4,4'-DDD	1600	35				
†	4,4'-DDT	2400					
	Methoxychlor (Mariate)	550	17		9900 C		
7	Endrin Ketone				9500 C		
á	Aroclor-1242				8100 C		
<b>d</b>	Aroclor-1254				0.200		
4-5	Aroclor-1260		_	(ppm)	(ppm)	(ppm)	(ppm)
בי ש		(ppm)	(ppm)	(Ppm)	14.4		37200
Ö	INORGANICS		8900	16000	6900	2100	11
2	n 9	5600		4.5	2.6	2.6	320
	Aluminum	3.4	3.1	180	84	390	2.8
CA CA	Arsenic	81	130	1.1			7.3
	Barium				1.6		9300
Sauget	Beryllium Cadmium		5560	6540	2450	48100	29
•	Calcium	17000	9.2	14	13	20	17
	Chromium	6.1	7.2	9.1			110
(X	Cobalt		24	13	10	16	37900
Sites	= -:	4.7	10900	17700	8290	12500	190
2	Copper Iron	7110	62	43	50	62	5010
	Lead	49	3040	3790	1750	650	780
Area	Magnesium	3960	200	520	100	110 .	0.19
•	Manganese	150	200			 20	38
	Mercury	9.0	14	18	11	260	5240
#2	Nickel		1580	2370	1030		1.1
10	Potassium	930	1300		1.3	1450	
	Selenium					1450	80
	sodium		25	38	19		760
	Vanadium	17	150	100	120	150	0.51
	Zinc	46	150			210	76
	Cyanide		110	63	70	310	
	Sulfate	170	110			220	
	Sulfide	130	<del>-</del> -				

Table 4-1 (continued)

Table 5-5. Summary of Target Compound List Semivoletile Organic Compounds Detected in Sediment Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location: Sample Date: Units:	SS-1 6/30/92 ug/kg	SS-2 6/30/92 ug/kg	\$\$-3 6/30/92 ug/kg	SS-4 6/30/92 ug/kg	SS-5 6/30/92 ug/kg	SS-6 6/30/92 ug/kg	\$S-7 6/30/92 ug/kg	SS-8 6/30/92 ug/kg	Equipment Blank 6/30/92 ug/L	
Parameter										
2-Methylphenol (o-cresol)	-	_	-	-	_		<b>4</b> 5 J	_	_	
2,4-Dimethylphenol	-		_	-	_		29 J	-	_	
Naphthalene	-	-	**	-	_		230 J	200 J		
2-Mothylnephthalene			_	~-	_		410	360		
Acenephthene	-	_	-	-			20 J	_	-	
Dibenzofuran	-			-			51 J	66 J	_	
Diethylphthelete	22 J	28 J	19 J	17 J	_		14 J	-		
Fluorene	-	-	-		-		31 J	15 J		
Phenanthrene	-		_	· <b>_</b>	-	-	370	270 J	_	
Anthracene	~-		-	-	_		91 J	44 J		
Carbazole	-		-		-		31 J	32 J	-	
Di-n-butylphthalate	-		<b>9</b> J				13 J			•
Fluoranthene	-		54 J	_	160 J	-	170 J	130 J	_	
Pyrene	<b>9</b> J	23 J	48 J	19 J	150 J	25 J	380	180 J	_	
Butylbenzylphthelete	11 J	11 J		9 J			25 J	25 J		
Benzo(a)anthracene		_		-	130 J		450	180 J		
Chrysene		_	44 J	_	140 J	34 J	470	190 J	_	
bis(2-Ethythexyl)phthalate		-	53 J	-				54 J	_	
Di-n-octylphthelete	37 J	-	22 J			_		32 J		
Benzo(b)fluoranthene	-	-			120 J		280 J	97 J		
Benzo(k)fluoranthene	-		-	-	110 J	••	130 J	**		
Benzo(a)pyrene	-	-	-		120 J	-	490	210 J		
Indeno(1,2,3-cd)pyrene	<b>+-</b>	-	-		38 J		100 J	-		
Benzo(g,h,i)perylene	-		-	-	38 J	-	160 J	-		
Total SVOCs	79	62	249	45	1006	59	3990	2085	_	

ug/kg Micrograms per kilogram. ug/L Micrograms per iker.

Estimated value.
Not detected.

SVOCs Semiyoistile organic compounds.

Table 5-6. Summery of Target Compound List Pesticides and PCBs Detected in Sediment Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Lacation: Sample Date: Units: Parameter	\$\$-1 6/30/92 ug/kg	\$\$-2 6/30/92 ug/kg	6S-3 6/30/92 ug/kg	SS-4 6/30/92 ug/kg	\$\$-5 6/30/92 ug/kg	\$\$-6 6/30/92 ug/kg	SS-7 8/30/92 ug/kg	SS-8 6/30/92 ug/kg	Equipment Blank 6/30/92 ug/L
Pesticides/PCRs	·								
4,4-00E	8.8	~	-	-	-	-	~	<del>-</del>	-
4,4'-DDT	67	-	-	-	-	-	-	-	-
Aroclor-1248	-	-	570 J	-	-	-	79 J	220 J	-
Aroclor-1254	- '	••	520 J	64 J	52 J	~	110 J	220 J	-
Aroclor-1260	80	<b>320</b> J	410 J	92 J	99 1		120 J	230 J	

ug/kg Micrograms per kllogram.

ug/L Micrograms per liter.
J Estimated value.

- Not detected.

PCB Polychlorinated biphenyls.

Table 5-7. Summery of Target Analyte List Parameters Detected in Sediment Samples, Sauget Site R, Moneanto Company, Sauget, Illinois.

Semple Location: Semple Date: Units: Pgrameter	SS-1 6/30/92 mg/kg	\$\$-2 <b>6/3</b> 0/92 <b>mg/kg</b>	85-3 6/30/92 mg/kg	SS-4 6/30/92 mg/kg	SS-5 6/30/92 mg/kg	SS-6 6/30/92 mg/kg	SS-7 6/30/92 mg/kg	SS-8 6/30/92 mg/kg	Equipment Blank 6/30/92 ug/L
Vuminum	10100	10000	11200	10500	11900	11100	11400	7870	
<b>Untimony</b>	R	R	R	R	R	R	R	R	_
Arpenic	4.3	9.6	3.8	6.3	7.7	4.5	7.3	5.3	_
Barlum	92.8	123	107	118	124	111	111	111	
Calcium	7160	7020	3440	6470	5850	4470	4490	8110	271 8
Chromium	16.2	17.8	18.4	15.8	18.4	18.2	20.1	13.7	
Cobelt	8.2 B	9.6 B	9.9 B	9.7 B	10.0 B	9.4 B	9.0 B	9.1 B	
Copper	19.1	22.2	20.6	17.7	20.1	15.5	20.0	19,1	_
ron	15700	19100	17700	17400	19200	17700	18700	14800	-
.eed	15.1	20.5	12.3	22.6	21.9	13.2	20.2	16.8	
Angnesium	4950	4610	3090	4150	4120	3790	3810	5450	
Angenese	473	594	592	549	566	616	461	513	-
Aercury	0.05	0.11		0.13	0.06	_	0.05	0.06	-
ticke)	19.0	23.6	21.0	20.6	22.2	20.7	27.9	22.7	-
otassium	1270	1250	1290	976 B	1290	1110	1300	919 B	
Sadlum	~	-	-	_	-	_	-	-	561 B
/anadium	31.9	31.7	36.8	29.5	33.4	33.4	<b>55.2</b>	29.2	~
Zinc Zinc	99.4	117	116	85.9	128	82.2	171	105	
Cyenide	-			-	-	_	_		

Not detected.

ug/L Micrograms per liter. mg/kg Milligrams per kilogram.

B Compound is between the contract required detection limit and the instrument detection limit.

R Data were unusable.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-1	SB-1	SB-1	SB-2	SB-2	SB-2
Sample Depth:	12-14 ft	26-28 ft	32-34 ft	12-14 R	14-16 ft	28-30 ft
Sample Date:	4/9/92	4/9/92	4/9/92	4/10/92	4/10/92	4/13/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter						
Methylene chloride	_	_	_	<del>-</del>	250 J	_
Acetone	_	9800	11000	81000	<b>5300</b> J	9000
1,1-Dichlorosthene	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-		-	-	
Chloroform		_	-	-	670 J	_
1,2-Dichloroethane	220000	-	_	_	-	-
2-Butanone (MEK)		_		-	-	-
1,1,1-Trichloroethane	_	-	-			_
Bromodichloroethane	-		-	•••	-	_
Trichloroethene	_		-	-	-	_
Dibromochloroethane	-	-		-		_
Benzene —————	<del>- 210000</del>	1400 J	1700	26000 J	7. 200000 D	3900
4-Methyl-2-pentanone	-				-	-
Tetrachioroethene	3700 J	-	-	-	1800 J	
Toluene	16000 J	880 J	1100 J	38000 J	74000 J	830
Chlorobenzene	890000	18000	9200	650000	2400000 D	33000
Ethylbenzene	43000 J	760 J	750 J	_	680 J	_
Xylenes	110000	2200 J	1500 J	-	<b>2600</b> J	350
Total VOCs	1492700	33040	25250	795000	2685300	47080

ug/L Micrograms per liter.

ug/kg Micrograms per kilogram.

Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-3	SB-3	SB-3	SB-4	SB-4	SB-4
Sample Depth:	12 - 14 R	14 - 16 ft	32 - 24 ft	10-12 ft	12-14 ft	30-32 ft
Sample Date:	4/16/92	4/16/92	4/16/92	4/14/92	4/14/92	4/14/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter						
Methylene chloride	<u> </u>	_	_	_	•••	_
Acetone	500000	320000	_	17000	2500	34000
1,1-Dichloroethene		_	_	-	••	
1,2-Dichloroethene (total)	-	-	_	-		-
Chloroform	-	-	-	_	150 J	_
1,2-Dichloroethane	-	-	-	-	-	_
2-Butanone (MEK)	_	-	-	-	2400	-
1,1,1-Trichioroethane					190 J	
Bromodichloroethane	-	-	-	-	-	
Trichioroethene	-	-	-	-	-	-
Dibromochloroethane	-	-	_	_	-	-
Benzene	-	-	<b>6300</b> J	-	7700	31000
1-Methyl-2-pentanone	-		-	-	-	
Tetrachioroethene	90000	6600 J	2600 J	660 J		_
l'oluene	450000	160000	14000 J	43000	24000	110000
Chiprobenzene	420000	160000	120000	29000	14000	350000
Ethylbenzehie	970000	63000	_	3800 J	6800	38000
Kylones	1500000	100000	9200 J	25000	43000 J	160000
Total VOCs	3930000	809600	152100	118460	100740	723000

ug/L	Micrograms per liter.
ug/kg	Micrograms per kilogram.
	Not detected.
Ε	Concentration is above the calibration range of the instrument.
J	Estimated value.
8	Compound detected in blank.
D	Concentration determined at a secondary dilution factor.
VOCs	Volstile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Total VOCs	514700	294000	166200	309000	466000	52200
Kylenes	9700 J	-	-	96000	150000	11000
Ethylbenzene		-	-	18000	27000	1900
Chlorobenzene	460000	270000	130000	140000	200000	33000
Coluene	32000 J	22000 J	8700	55000	89000	5100
Tetrachioroethene	_	-	8600	_	_	-
l-Methyl-2-pentanone			-	-	_	
Benzene	13000 J	2000 J	4900 J	-	-	1200
Dibromochloroethane	••	-	-	-	_	-
Trichloroethene	-	-	<del>-</del>	-	-	_
Bromodichloroethane	-	_	-	_	-	_
1,1,1-Trichloroethane	_	-	-	-		_
2-Butanone (MEK)	-		-	-	_	_
1,2-Dichloroethane	_	_	-	_	_	-
Chloroform	-	-		-		_
2-Dichloroethene (total)	-	-		-	_	_
1,1-Dichloroethene	_	_	_	-		_
Acetone	-	-	14000 B	-		-
Wethylene chloride	_	_	••	_	_	_
Parameter						
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample Date:	5/4/92	5/4/92	5/4/92	5/5/92	5/5/92	5/6/92
Sample Depth:	12-14 ft	20-22 ft	28-30 ft	18-20 ft	20-22 ft	28-30 ft
Sample Location:	SB-5	SB-5	SB-5	SB-6	SB-6	SB-6

ug/L Micrograms per liter.
ug/kg Micrograms per kilogram.
-- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-7	SB-7	SB-7	SB-8	SB-9	SB-9
Sample Depth:	16-18 ft	20-22 ft	24-26 ft	6-8 ft	18-20 ft	20-22 ft
Sample Date:	5/7/92	5/7/92	5/7/92	5/8/92	5/13/92	5/13/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter						
Viethylene chloride	_	-	-	-	-	-
Acetone	-	-	-	-	-	150000 E
1,1-Dichloroethene	-	-		_	-	-
1,2-Dichloroethene (total)		_		-	-	-
Chloroform	5400 J	-	_	-	-	-
1,2-Dichloroethane	_		-	<b>3000</b> J	-	_
2-Butanone (MEK)	-	-	-	-	8600 J	~ 8600
1,1,1-Trichioroethane	-	-		_	_	_
Bromodichioroethane	-		-	-	-	-
Trichlorosthene	_	-	_	2000 J	_	-
Dibromochloroethane	-	_	-		-	-
Benzene	3900 J	-	2900 J	20000	1600 J	-
4-Methyl-2-pentanone	77000 J	22000 J	67000 J	-	<b>.</b>	
Tetrachloroethene	-	-		-	8300	-
Toluene	3200 J	14000 J	22000	<b>590</b> 0 J	-	-
Chlorobenzene	190000 J	100000	110000	5500 J	6000 J	12000
Ethylbenzene	-	-	-	-	7600 J	1700 J
Xylenes .	-	-	-	3900 J	26000 J	9200
Total VOCs	279500	136000	201900	40300	58100	181500

Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

•			00.40			
Sample Location:	SB-9	SB-9	SB-10	SB-10	SB-10	\$B-11
Sample Depth:	28-30 ft	30-32 ft	6-8 ft	18-20 ft	24-26 ft	14-16 ft
Sample Date: Units:	5/13/92	5/13/92	5/14/92	5/14/92	5/14/92	5/19/92
Parameter	nove	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Methylene chloride	1400 J	13000 J	27000 3	-	1100 J	_
Acetone	-	••		_	19000 J	8000
1,1-Dichloroethene		_	_	_	-	_
1,2-Dichloroethene (total)	-		-59000	-	-	_
Chloroform	-	-	33000 3	_	-	_
1,2-Dichloroethane			130000 J	_	3200 J	_
2-Butanone (MEK)	(10000 J		-	_	10000 1	_
1,1,1-Trichloroethane	_	_	-			_
Bromodichloroethane	-	-		-	_	-
Trichloroethene			375000e	480000	33000 J	_
Dibromochloroethane	-	-	-	-		-
Benzene	6400 J	47000 J	97000 J	30000 J	1500 J	_
4-Methyl-2-pentanone	29000 J	110000 J	••	-	_	
Tetrachlorgethene	7500 J	37000 J		-	-	_
Toluene	-	240000	3800000	1200000	60000 J	1800
Chlorobenzene	110000	620000	370000	180000	17000 J	220
Ethylbenzene	<b>6000</b> J	28000 J	•	_	-	_
Xylenes .	39000	180000	100000 J	50000 J	3500 J	-
Total VOCs	209300	1275000	5371000	1940000	148300	10020

Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volstile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-11	SB-11	SB-12	SB-12	SB-12	SB-13
Sample Depth:	16-18 ft	30-32 ft	8-10 ft	22-24 ft	32-34 ft	16-18 ft
Sample Date:	5/19/92	5/20/92	5/15/92	5/18/92	5/1.8/92	5/21/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter	····					
Viethylene chloride	_	_	_	_		_
Acetone	18000 J	_		21000 J	3000	_
1,1-Dichloroethene	-	-	(290 )	_	_	_
1,2-Dichiorosthene (total)	-	_	~	_	_	-
Chloroform	-	_	_	_	_	360 J
,2-Dichloroethane	_	_	-	_	_	_
2-Butanone (MEK)	_		2300 J	9000 J		2800
1,1,1-Trichloroethane	-	-	_		_	_
Bromodichloroethane						<b>3</b> 50 J
Trichloroethene	_	-	360 J	_	-	سو
Dibromochioroethane						300±
Benzene	-	-	320 J	1300 J	_	2200
I-Methyl-2-pentanone	-	-	-	-	-	· <b>-</b>
letrachioroethene	-	37000	340 J	1800 J	_	_
l'oluene	8700 J	26000	3600 J	9400 J		-
Chlorobenzene	-	190000	210 J	41000 J	7900	_
Ethylbenzene	-	9000 J	-	<b>46000</b> J	3800	-
Kylenes	-	61000	-	230000 EJ	23000	-
Fotal VOCs	26700	323000	7420	359500	37700	<b>60</b> 10

Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration distermined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-13	SB-13	SB-14	SB-14	SB-14	SB-15
Sample Depth:	18-20 ft	30-32 ft	10-12 ft	20-22 ft	30-32 ft	16-18 R
Sample Date:	5/21/92	5/21/92	5/22/92	5/26/92	5/26/92	5/27/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter	·					
Methylene chloride	_	-	_	_	10000 J	_
Acetone	2900	6600	_			200000
1,1-Dichloroethene	-	-	-	_	_	
1,2-Dichleroethene (total)	-	-	_	-	-	-
Chloroform	-			-	-	
1,2-Dichloroethane	_		-	-	_	_
2-Butanone (MEK)	2700 J	2400	3200	_		_
1,1,1-Trichloroethane	-		-	_	_	_
Bromodichloroethane	-	-	-	-	-	-
Trichloroethene	_		370 J	_	-	_
Dibromochioroethane	-	-	-		_	
Benzene	420 J	9700	7200	1100 J	-	
4-Methyl-2-pentanone				<b>-</b> .		2800000
Tetrachiorouthene	-		-	-	· _	
Toluene	_	270 J	540 J	2700 J	_	_
Chlorobenzene	360 J	6900	26000	23000	360000	390000
Ethylberizene	-	-	-	-	-	510000
Viene	-	-	_	<b>2900</b> J		4100000
Total VOCs	6380	25870	37310	29700	370000	8000000

- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-15	SB-15	SB-16	SB-16	SB-16	SB-16
Sample Depth:	18-20 ft	26-28 ft	6-8 €	16-18 ft	28-30 ft	30-32 R
Sample Date:	5/28/92	5/28/92	5/29/92	5/29/92	5/29/92	5/29/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter	·	<del></del>				
Viethylene chioride	10000 J	-	-	_	-	_
Acetone		15000 B	20000 B	-	-	-
1,1-Dichloroethene	-	-	-	-		-
r,2-Dichloroethene (total)		-	-	-	-	-
Chiaroform	-		-	-	_	-
1,2-Dichioroethane	-	<u>-</u>	-	-	_	-
2-Butanone (MEK)		-	1300 J	1600	_	1800
I,1,1-Trichloroethane	-	-	-	-	-	-
Bromodichioroeth <b>s</b> ne	_		-	-	_	-
Trichioroethene	-	-	-	-	-	-
Dibromochloroethane		-	-	-	-	_
Benzene	-	-	-	-	320 J	390
I-Methyl-2-pentanone	470000	18000	-	-	-	
Tetrachioroethene	-	-	_	-	_	_
Toluene	-	-	-	-	-	_
Chlorobenzene	120000	-	750 J	6900	5100	4200
Ethylbenzene	65000	-	-	-	-	-
(ylenes	460000	-	-	-	-	-
Fotal VOCs	1125000	31000	22050	8500	5420	6390

Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound Liet Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location: Sample Depth:	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Sample Date:	4/9/92	4/10/92	4/13/92	4/14/92	4/16/92	4/21/92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter			· · · · · · · · · · · · · · · · · · ·		<u> </u>	
Viethylene chioride	_	-	_	-	_	_
Acetone	-	-	-	-	_	
I,1-Dichlorosthene	-	-	_	_	-	-
(total)	-	-	_	-	-	_
Chloroform	-	-	-	-	-	-
1,2-Dichloroethane	-		-	-	-	_
2-Butanone (MEK)	-	-	_	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	_
Bromodichloroethane	-	-	-		_	_
Trichloroethene	-	-	-	-	-	-
Dibromochloroethane	-	-	_	-	-	-
Benzene	-	-	-	-	-	-
-Methyl-2-pentanone	-	-	-	-	-	
l'etrachioroethene	-	-	-	-	-	
Toluene	-	-	-	-	-	
Chlorobenzene	-	-	_	-	-	
Ethylbenzene	-	-	-	-		-
Kylenes	-	-	-	-	••	-
Total VOCs	_		_	_	_	•

ug/L	Micrograms per liter.
ug/kg	Micrograms per kilogram.

- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCe Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monaanto Company, Sauget, Illinois.

Sample Location: Sample Depth:	Trip Blank br>5/7/92					
Sample Date:	4/23/92	4/27/92	5/4/92	5/5/92	5/6/92	
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter						
Wathylene chloride	_	_	-	_	_	_
Acetone	21 J	4 J		-	-	
1,1-Dichloroethene	-	-	_	-	-	
1,2-Dichlorosthene (total)	_	_	-	-	-	-
Chilaroform		_	_	-	_	-
1,2-Dichloroethane	_	_	_	_	-	-
2-Butanone (MEK)	_	-	-	-	_	
1,1,1-Trichioroethane	-	-	_	-	_	-
Bromodichioroethane	4 J	-	-	-	-	-
Trichloroethene	_	-	_	-	_	-
Dibromochloroethane		-	_	-	-	-
Benzene	-	-	_	_	_	-
4-Methyl-2-pentanone	-	-	_	_	-	
Tetrachioroethene	_	-	-	-	-	-
Toluene	-	_		-	-	-
Chlorobenzene	-	-	-	_	_	-
Ethylbenzene	-	_		-	-	-
Kylenes	_	-	-	-	_	-
Total VOCs	25	4	_	_	_	

- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Votable organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location: Sample Depth:	Trip Blank					
Sample Date:	5/8/92	5/13/92	5/14/92	5/15/92	5/18/92	5/19/92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter						
Visthylene chloride	_	_	_	_		_
Acetone	_	_	<b>-</b> .	_	-	-
I,1-Dichloroethene	-	-	-	-	_	_
1,2-Dichlorosthene (total)	_	-	-	-	-	-
Chloroform	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	_	-	-
2-Butanone (MEK)	_		-	-	-	-
1,1,1-Trichloroethane	_	-	-	_	_	-
Bromodichloroethane	_	-	-	_	_	1
Trichloroethene	-	3 J	-	-	_	1
Dibromochioroeth <b>ene</b>	_	-	_		_	2
Benzene	_	-	-	_	-	-
f-Methyl-2-pentanone	_	-	_	_	_	-
Tetrachloroethene	_	-	-	_	-	· <b>-</b>
Toluene	-	7 J	-	_	-	
Chlorobenzene	-	1 J	-	_	-	-
Ethylbenzene	_	-	_	-	_	-
(ylenes	-	-	-	-	-	-
Fotal VOCs		11		_	_	4

- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volstile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location: Sample Depth:	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Sample Date:	5/20/92	5/21/92	5/22/92	5/26/92	5/27/92	5/28/92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter	<del></del>					
Methylene chloride	_	_	_	-		-
Acetone	_	-	-	-	_	-
1,1-Dichloroethene	_	-	-	-		-
1,2-Dichlorouthene (total)	_	-	-	-	-	-
Chleroform	-	-	_	••	-	
1,2-Dichloroethane	-	-	-	-	-	
2-Butanone (MEK)	-	-	-	-	-	-
1,1,1-Trichiorosthane	-		-	_	-	-
Bromodichioroethane	-	-	_	-	-	-
Trichloroethene	_	_	-	-	-	_
Dibromochioroethane	-		-	-	-	-
Benzene	-	-	-	-	-	-
4-Methyl-2-pentanone	_	-	-	-		
Tetrachioroethene	-	-			-	-
Toluene	-	_		-	-	-
Chlorobenzene	-	-	-	-	-	-
Ethylbenzene	-	-	-	-		-
Kylenes	-	-	-	-		-
Total VOCs	_	_	_	_		_

Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Trip Blank
Sample Depth:	,
Sample Date:	5/29/92
Units:	ug/L
Parameter	
Methylene chloride	_
Acetone	_
1,1-Dichloroethene	_
1,2-Dichlorosthene (total)	-
Chiaroform	_
1,2-Dichloroethane	_
2-Butanone (MEK)	_
1,1,1-Trichloroethane	_
Bromodichloroethane	_
Trichloroethene	_
Dibromochlorosthane	-
Benzene	-
4-Methyl-2-pentanone	_
Tetrachioroethene	_
Toluene	-
Chlorobenzene	-
Ethylbenzene	-
Xylenes	-
Total VOCs	_

ug/L	Micrograms per liter.
ug/kg	Micrograms per kilogram.
_	Not detected

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volstile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank
Sample Depth:						
Sample Date:	4/9/92	4/10/92	4/13/92	4/14/92	4/16/92	4/21/92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	u <b>g</b> /L
Parameter				<del></del>		
Mathylene chloride	-	_	_	-	-	-
Acetone	-	_	-	-	-	6
,1-Dichloroethene	-	-	-	-	-	-
,2-Dichloroethene (total)	-	-	-	-	-	-
Chloroform	-	-	-	-	-	
,2-Dichloroethane	-	_	-	-		-
2-Butanone (MEK)	-	-		-	_	-
1,1,1-Trichloroethane	••			-	-	-
3romodichloroethane	-	-	-	-	-	-
[richloroethene	-	-	-	2 J	-	
Dibromochloroethane	-	-	-	-	_	-
Benzene	_	-	-	0.9 J	-	-
I-Methyl-2-pentanone	_	-	-	-	_	
Tetrachioroethene	-	-	-	-	-	-
l'oluene	_	-		-	-	-
Chlorobenzene	-	-	-	1 J	-	-
Ethylbenzene		_	-	-	-	-
(ylenes	-	-	-	-	_	-
Total VOCs	_	-	_	3.9	_	6

- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

	Equipment	Equipment	Equipment	Equipment	Equipment	Equipment
Sample Location:	Blank	Blank	Blank	Blank	Blank	Blank
Sample Depth:						
Sample Date:	4/23/92	4/27/92	5/4/92	5/5/92	5/6/92	5/7 <i>1</i> 92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter						<del> </del>
Wethylene chloride	-	-	_	-	_	-
Acetone	-	-	-	-	9 J .	_
1,1-Dichloroethene	-	-		-		-
1,2-Dichloroethene (total)	-	-	•••	-	-	-
Chloroform	-	-	_	_		-
1,2-Dichloroethane	-	-	-	-	-	-
2-Butanone (MEK)	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-
Bromodichloroethane	-	-	-	-	-	-
Trichloroethene	-	-	-	-	_	-
Dibromochloroethane	-	-	-	-	-	-
Benzene	-	-	-	-	-	-
f-Methyl-2-pentanone	-	-	-	-	-	
Tetrachloroethene	-	-	-	-	-	-
Toluene	-	-	-	-	-	-
Chlorobenzene	-	-		-	_	-
Ethylbenzene	-	-	-	-	-	-
(ylenes	-	-	-	-	-	-
Total VOCs		_	_	_	9	-

- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank
Sample Depth:						
Sample Date:	5/8/92	5/13/92	5/14/92	5/15/92	5/18/92	5/19/92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter					· · · · · · · · · · · · · · · · · · ·	
Asthylene chloride	_	_	_	-	-	-
cetone	-	16	_	-	-	-
,1-Dichloroethene	_	_	-	-	_	-
,2-Dichloroethene (total)	-	-	-	-	_	-
Chloroform	-	-	-	-	_	
,2-Dichloroethane	_	-	-	-	-	-
-Butanone (MEK)	-	<del>-</del> :	-	-		-
,1,1-Trichloroethane	-	-	_	-	-	••
3romodichloroethane	_	-	-		-	_
richloroethene		_	_	-		-
Dibromochloroethane		-	-	-	-	-
Senzene	-	-	-	-	-	-
-Methyl-2-pentanone	_	-	-	_	-	•
etrachioroethene	-	-	-	-	-	-
oluene	-	-		-	-	
Chiorobenzene	-	-		-	-	-
Ethylbenzene	-	-	-	<del>-</del>	-	-
(ylenes	-	-	-	-		-
otal VOCs		16	_	_	_	_

- Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

	Equipment	Equipment	Equipment	Equipment	Equipment	Equipment
Sample Location:	Blank	Blank	Biank	Blank	Blank	Blank
Sample Depth:						
Sample Date:	5/20/92	5/21/92	5/22/92	5/26/92	5/27/92	5/28/92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter						
Methylene chloride	-	-	<b>-</b> .	-	_	_
Acetone	_	-	-	-	-	
,1-Dichloroethene	_	-	_	-	-	
,2-Dichioroethene (total)	_	-	-	-	_	_
Chloroform	-	-	-	-	-	
,2-Dichloroethane	_	-	_	-	-	_
2-Butanone (MEK)	-	-	_	-		
1,1,1-Trichioroethane	-	-	_	_	_	_
3romodichioroethane	-	-	-	-	-	-
richloroethene	_	-	-		-	-
Dibromochloroethane	-		-	-	-	-
Benzene	-		-	-	-	-
I-Methyl-2-pentanone	_		-	-		٠ -
Tetrachioroethene	-	-	-	-	-	-
Coluene	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-
(ylenes	-	-	-	-	-	-
Fotal VOCs						

Not detected.

E Concentration is above the calibration range of the instrument.

J Estimated value.

B Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Volatile organic compounds.

Table 5-8. Summary of Target Compound List Volatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

	Equipment		
Sample Location:	Blank		
Sample Depth:			
Sample Date:	5/29/92		
Units:	ug/L		
Parameter		_	 
Vethylene chloride	_		
Noetone .	_		
,1-Dichloroethene	_		
,2-Dichloroethene (total)	_		
Chloroform	-		
,2-Dichioroethane	_		
2-Butanone (MEK)	-		
1,1,1-Trichioroethane	_		
Bromodichioroethane	-		
richloroethene	-		
Dibromochioroethene	-		
Benzene	-		
I-Methyl-2-pentanone	-		
Fetrachioroethene	-		
l'oluene	_		
Chlorobenzene	-		
Ethylbenzene	-		
(ylenes	-		
Total VOCs	_		

ug/L	Micrograms per liter.
ug/kg	Micrograms per kilogram.
_	Net detected

Ε Concentration is above the calibration range of the instrument.

J Estimated value.

В Compound detected in blank.

D Concentration determined at a secondary dilution factor.

VOCs Voiatile organic compounds.

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-1	SB-1	SB-1	SB-2	SB-2	SB-2
Sample Depth:	12-14 ft	26-28 ft	32-34 ft	12-14 ft	14-16 ft	28-30 R
Sample Date:	4/9/92	4/9/92	4/9/92	4/10/92	4/10/92	4/13/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter		<del></del>				
Phenol	2100000	520000	490000	120000 J	390000	720000 D
bis(2-Chloroethyl)ether			_	_		_
2-Chlorophenol	_	200000	64000 J	94000 J	160000	51000 J
1.3-Dichlorobenzene	-	-	_	_	3000	_
1,4-Dichlorobenzene	410000	59000 J	12000 J	410000	<b>600000</b>	37000 J
1,2-Dichlorobenzene	260000 J	180000	34000 J	280000	<b>540000</b>	26000 J
2-Methylphenol (o-cresol)	_	_	_	-	_	**
4-Methylphenol (p-cresol)	-	-		_	-	_
Nitrobenzene	38000 J	120000 J	22000 J	540000 D	650000	90000
2;4-Dimethylphenol		-		_	-	-
2,4-Dichlorophenol	<b>₹₹₹₹₹</b>	300000	80000	610000 D	630000	93000
1,2,4-Trichlorobenzene	6700 J	75000	10000 J	5000 J	8700 J	-
Naphthalene	_		720 J	-	-	_
4-Chioroeniline	_	-	_	_	_	-
2-Methylnaphthalene	_		_	_	-	-
2,4,6-Trichlorophenol	<b>120000</b>	110000 J	19000 J	260000 J	400000	81000
2,4,5-Trichlorophenoi		-	-	-	-	-
2-Nitroeniline	-	-	-	-	-	-
Dimethylphthalate	-	_	_	-	_	٠ ــ
Acenephihene			-	-	-	_
Dibenzofuran	-	_	_	-		
Diethytphthelate	_	-	_	_	_	-
Fluorene	_	-			_	_
4-Nitroaniline	(1200D)	15000 J	_	33000 J	_	_
N-Nitrosodiphenylamine	_	J0000	_	9100 J	7100 J	_
Pentachiorophenol	_	-	-	_	-	-
Phenanthrene	_		-	-		
Arithracene	_	_	_	_	_	-
Carbazole	. <b>-</b>	-		-	-	_
Di-n-butylphthelate	_	_	_		-	-
lugranthene	_		_	_	-	_
Pyrana	-	-	-	-	-	-
Butylbenzylphthalate	-	_	_		-	-
3.3-Dichierobenzidine	-	· -	-	-		_
Benzo(a)anthracene	-	_	_	_	-	_
Chrysene	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	960000	32000 J	-	_	-	
Di-n-actylphthalale	-	-	-	_	_	2100-2
Benzo(b)fluoranthene	-	-		_	_	-
Senzo(k)fluoranthene	_	-	-	_	-	-
Benzo(a)pyrene	-	-	_	_	_	_
ndeno(1,2,3-od)pyrene	-	_	_	-	_	-
Benzo(g,h,i)perylene	-	-	_	-	_	_
Lalling	_		-	-	_	_
2-Chloroeniline	170000 J	23000	210000	240000	480000	230000
- Chiorouniline	-	_	3200 J	-	•	9000
		~~~	0.445	0004400	40722	400400
Total SVOCs	6964700	2151000	944920	2801100	4073800	1339100

ug/L Micrograms per liter. ug/kg J Micrograms per kilogram. Estimated value.

D Concentration determined at a secondary dilution factor.

R Unusable value.

Exceeded the instrument calibration range.

Nat detected. Servivolatile organic compounds. SVOCS

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-3	SB-3	SB-3	SB-4	SB-4	SB-4
Sample Depth:	12-14 R	14-16 ft	32-34 ft	10-12 ft	12-14 ft	30-32 ft
Sample Date:	4/16/92	4/16/92	4/16/92	4/14/92	4/14/92	4/14/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter						
Phenoi	1300000	1600000	1100000 D	830000	190000	320000 J
ois(2-Chloroethyl)ether	-			-	-	-
2-Chiorophenol	960000	1100000	490000	590000	270000	150000 J
,3-Dichlorobenzene	<b>-</b> ·		-	-	_	_
,4-Dichlorobenzene	-	96000	76000 J	55000 J	51000 J	22000 J
,2-Dichlorobenzene	96000 J	170000 J	280000	470000	58000 J	75000 J
2-Methylphenol (o-cresol)	-	-	-	54000	<b>-</b>	
l-Methylphenol (p-cresol)		_	-	-	<del>-</del>	7300
Nitrobenzene	450000	420000	110000 J	86000 J	69000	15000 J
Bit-Dimethylphanol	<u>-</u>	-	<b>270</b> 0 J		-	
2,4-Dichlorophenol	3200000	3500000 D	950000	C11000000 D	4200000 D	110000 J
RR,4-Trichiorobenzene	-	-		100000 J	72000	32000 J
Naphthalene	530000 J	₹ 200000	-	-	-	-
I-Chiorganiline	-		34000 DJ	-	-	-
2-Methylnaphthalene	_	Canting &	_	-	-	
2,4,6-Trichlorophenol	3600000	CHILDRA .	290000	3700000 D	1700000 D	49000 J
2,4,5-Trichlorophenol	-	-	-	-	-	-
-Nitroeniline	-	-	-	-		2000
Dimethylphthalate	_	-		-	-	3000
Noenephthene	-	_	-		-	-
Dibenzofuran	-	-	-	-	-	-
Distry(phthalate	-	-	-	-	-	-
Fluorene		400000	05000 1	50000 1	-	_
I-Nitroeniline	320000 J	-	25000 J	52000 J	7900	_
N-Nitrosodiphenylamine	-	-	-	-		-
Pentachiorophenol	-	_	-	-	-	_
Phonenthrene			_	-	-	_
Anthracene	-	-	-	-	-	-
Carbazole Si n hi didabibalata	-	-	-	<u>-</u>	_	_
Di-n-butylphthelete	_	-		_	<b>-</b>	-
Fluoranthene	_	<del>-</del>	<b>-</b>	_	_	_
<b>Pyrane</b> Bulylbenzylphthalate	-	10000	7000 J	_	9200 J	_
3.3'-Dichlorobenzidine	_	-	7000 3	_	<b>3200 J</b>	_
Benzo(a)enthracene	_	<u> </u>	_	_	_	_
Chryster	_	_	_	_	_	_
bis(2-Ethylhexyl)phthalate	_	_	_	_	_	_
2i-n-octylphthelete	-	_	2000	_	_	_
Senzo(b)fluoranthene	. =	-	-	-	-	_
Bergs(k)fluorenthene	_	-	_	-	-	-
Benzo(a)pyrene	_	-	-	_	-	-
ndene(1,2,3-od)pyrene	_	-	_	-	-	_
Benzo(g,h,i)perylene	_	_	-			_
Milito	_		,	THE PARTY OF THE P	. 18000 J	_
2-Chlorosniline	1700000	350000 D	1500000 D	220000 J	110000	73000 J
<b></b>	-		**		-	
		_			_	
Total SVOCs	12158000	15536000	5073500	18257000	6758000	859600

ug/L	Micrograms per liter.
ughe	Micrograms per kilogram.
J	Estimated value.
D	Concentration determined at a secondary dilution factor.
R	Unusable value.
E	Exceeded the instrument calibration range.
_	Not detected.
SVOCa	Semivatellia argenic compounds.

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	S8-5	SB-5	SB-5	SB-6	SB-6	SB-6
Sample Depth:	12-14 R	20-22 ft	28-30 ft	18-20 ft	20-22 ft	28-30 ft
Sample Dete:	5/4/92	5/4/92	5/4/92	5/5/92	5/5/92	5/6/92
Units:				ug/kg	ug/kg	
arameter	ug/kg	ug/kg	ug/kg			ug/kg
henal	260000 J	300000	590000	3300000	58000000	1500000
is(2-Chloroethyl)ether	20000 3	-	-	-	_	150000
-Chlorophenol	230000 J	61000 J	80000 J	4200000	<b>6900000</b> O	3600000 [
,3-Dichlorobenzene	_	<b>1300</b>	••		-	-
,4-Dichlorobenzene	J20000 J	43000 J	27000 J		20000 J	12000 J
,2-Dichlorobenzene	2100000	200000	57000 J	570000 J	1100000	120000 .
-Methylphenol (o-cresol)		_	_	_		-
-Methylphenol (p-cresol)	-	-	-	500000 J	<b>\$4000</b> 0	290000
litrobenzene	-	100000	-	-	160000	110000 J
,4-Dimethylphenol		-	-	120000 J		⊷ <b>100000</b> J
,4-Dichlorophenoi	11000000 8	950000 D	370000	4100000	9600000 D	1200000
,2,4-Trichiorobenzene	1000000	140000	23000 J	200000 J	520000	<b>69000</b> J
iaphthalene	-	_	-	<b>670000</b>	-	-
-Chioroeniline	-		-	-	-	-
-Methylnaphthalene		-		-	-	
,4,6-Trichlorophenol	<b>10000</b>	190000	7 <b>600</b> 0 J	1300000	30000	700000
,4,5-Trichlorophenol	-	_	-	_	1500000	-
-Nitroeniline		-	-	-	Section D	, · •
imethylphthelete	-	-	-	_	-	-
cenephihene	-	-	-	-	-	-
ibenzofuren	-	-	-	-	_	-
ialtylphihalate	-	-	-	-	-	-
luorene	-	-	-	-	-	
Mirraniine	-	-	-	-	-	-
I-Nitrosodiphenylamins	-	-		-	-	
entachiorephenel	-	-	45000 J	150000 J	-	200000
henanthrene	-		-	-	-	-
ulțiracene	-	-	-	-	-	_
arbezole	-	-	-	-	-	-
II-n-butytphthetate	-	-	-	•	-	
luoranthene	-	-	-	-	-	-
yrune	-	-	-			-
ulylbenzylphthelete	-	-	-	_	_	-
3-Dichlorebensidine	-	-	-	R	R	-
lengo(a)enthracens	_	-	-	-	-	-
Prysone	-	••	-	-	-	_
is(2-Ethylhexyl)phthalate	-	-	-	-	22000	_
F-n-actylphilhelale	-	-	-	-	-	-
enzo(b)fluoranthene	-	-	-	-	-	-
enso(k)fluorenthene	-	-	-	_	-	-
enzo(a)pyrene	14 S 14	CONT. PM	-	-	-	-
ndene(1,2,3-od)pyrene		· · · · · · · · · · · · · · · · · · ·		-	-	<del>-</del>
lenzo(g,h,i)perylene		-	-	-		
<b>Latino</b>	33000 J	970000 D	500000 J	370000 J	790000	140000
-Chloroeniline -Chloroeniline	3300 J	Cy/mm	30000 J	3/000 J	/80000	140000
	. •••	64 L	-	-	-	-
otal SVOCs	17343000	2955300	1766000	15540000	27650000	8101000

Micrograms per liter. Micrograme per idiogram. Estimated value. ug/lig

Concentration determined at a secondary dilution factor. D

Ř

Unusable value.

Exceeded the instrument calibration range.

Met detected. Ε

Seminatelle organic compounds. SVOCs

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

812000	746000	513000	_	1475000	372100
TOUGH OF THE PROPERTY OF THE PARTY OF THE PA		- ~	ana a 🚆 i		-
110000 4	(20000)	140000 1		170000 !	41000
-	-	-	-	-	
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	_	-	_
-	_	-	_	-	-
-	-	-	-	-	_
-	-	-	-		-
_	-	-	-	_	_
-	_	_		€ 35000 P	3300
-	-	-	_		_
-	-	-	-	-	_
-		_	-	-	_
_	-	-	-	-	_
-	_		_	-	
_	_	_	_	••	-
-	_	-	_	-	-
_	_	-	_	-	_
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-	_	_		-	_
-	_	_	-	_	_
_	_	_	_		_
_	_	_	<u>-</u>	- TOTAL	-
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<u>-</u>	<u>-</u>	_	_	<b>-</b>	41000
<del>-</del>	<del>-</del>	<del>-</del>	_	<del>-</del>	
<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b> -	<b>4000</b>
_	-	-		-	_
-	-	-	-		13000
-	-	-	_	(52000 I	12000
CHILLE	190000 J	130000 J	-	-	-
220000	400000 I	420000	-	-	
-	-	-	-	-	-
	35000 J	37000 J	-	-	-
			-	-	-
-	-	-	-	-	-
(180000)	100000 J	<b>3300</b> 0 J		-	4500
-	<b></b> .		-	_	<del></del>
33000 J	120000 J	140000 J		1200000	270000
					ug/kg
					5/13/92
16-18 ft	20-22 ft	24-26 ft	6-8 ft	18-20 ft	20-22 ft
	5/7/92 ug/kg	5/7/92 ug/kg  33000 J  120000 J  180000 J  190000 J  190000 J  190000 J  190000 J  190000 J	5/7/92	\$77/92 \$77/92 \$77/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$78/92 \$7	\$7/82 \$7/92 \$7/92 \$9/92 \$1/39/2 ug/kg ug/k

ug/L Micrograms per iller. Micrograms per kliogram. ug/kg J D Estimated value.

Concentration determined at a secondary dilution factor.

R

Unusable value.
Exceeded the instrument celibration range.
Not detected. E

**SVOCe** Semivolatile organic compounds.

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-9	SB-9	SB-10	00.40	SB-10	25.44
				SB-10		SB-11
Sample Depth:	28-30 ft	30-32 ft	6-8 ft	18-20 ft	24-26 ft	14-16 R
Sample Date:	5/13/92	5/13/92	5/14/92	5/14/92	5/14/92	5/19/92
Units: Parameter	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
N1	******	ALL PARTY.	222222	422222		47000
Phenol is(2-Chloroethyl)ether	680000	2100000	280000 J	1300000 J	230000	470000
-Chlorophenol	140000 J	670000		_	12000 J	_
.3-Dichiorobenzene	_	-	_		-	_
.4-Dichlorobenzene	24000 J	€000a	_	_		_
,2-Dichlorobenzene	46000 J	200000	_	100000 J	-	_
2-Methylphenol (o-cresol)	-		_	-		_
l-Methylphenol (p-cresol)	_	_	_	James J	18000 J	_
Vitrobenzene	52000 J	(250000 J	_		2900 J	_
2,4-Dimethylphenol			-	15000	2800 J	_
2,4-Dichlorophenol	530000 J	290000	_	200000 J	34000 J	160000 J
2.4-Trichiorobenzene	41000 J	200000	_	200000 3		41000 J
Naphthalene	41000 3			<u>-</u>	_	41000 3
I-Chiorogniline	32000 J	_	130000 J	C2000000	23000_1	-
2-Methylnaphthalene	32000 3	_	150000 3	Calendary.		_
2.4.6-Trichlorophenol		_	_		9900 J	<b>130000</b>
2,4,5-Trichlorophenol		=	_	-	5000 3	Clarith
:,+,5-: no no opinino :-Nitroenline	_	-	-	100000	13000 J	. <b>-</b>
Dimethylphthalate	_	_	-	- Harrison	13000 J	-
	_	-	-	•		-
Noenaphthene Dibenzofuran	-	-	**	-	-	-
	_	-	-	-	-	-
Xethylphthelete Tuorene	-	-	-	-	-	-
-Nilroeniline	-		-	-	-	4000
	-	-	-	-	-	
i-Nitrosodiphenylemine	-	-	-	-	-	-
Pentachiorophenol	-	-	-	-	-	_
Phononthrone	-	-	-	-	-	-
Valhancene	-	-	-	-	-	-
Carbazole	-	-	-	-	-	-
3-n-butylphthelete	-	-	-	••	_	
luoranthene	_	-	-	-	_	
yvane	-	-	-	-	-	-
Sulylbenzylphthalate	-	-	-	-	-	_
3-Dichlorobenzidine	-	-	-	-	-	-
Senzo(a)anthracene	-	-	-	-	-	-
Chrysone	-	-		-	-	-
ia(2-Ethylhenyl)phthalate	-	-	470000 B	-	-	-
N-n-octylphthelate	-	-	-	-	-	-
enzo(b)fluoranthene	-	-	-	-	-	-
lenzo(k)fluoranthene	-	-	-	-	_	-
lenzo(a)pyrene	-	-	-	-	_	
ndeno(1,2,3-od)pyrene	_	-	-	-	-	-
lenzo(g,h,i)perylene	-		-		-	_
<b>Infilme</b>	23000 J	70000 J	-	100000	7800 J	-
-Chloroeniline	590000 J	2500000	200000 J	4900000	110000	_
I-Chloroeniline	15000 1		· <del>-</del>	(190000 J	-	
Total SVOCs	2173000	8976000	980000	10380000	462100	842000

ug/L Micrograms per liter. ug/kg Micrograms per kilogram. Estimated value.

D Concentration determined at a secondary dilution factor.

R

Unusable value.
Exceeded the instrument calibration range.
Not detected.
Semivolatile organic compounds. E

SVOCs

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-11	SB-11	SB-12	SB-12	SB-12	SB-12
Sample Depth:	16-18 ft	30-32 ft	8-10 ft	22-24 ft	32-34 ft	32-34 ft
Sample Date:	5/19/92	5/20/92	5/15/92	5/18/92	5/18/92	5/18/92
Units: Parameter	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
						<del></del>
thenoi is(2-Chloroethyl)ether	480000 J	9700 J	1 <b>80</b> 0 J	5109000	J209000 E	710000 [
-Chlorophenol	_	<del>-</del>	_	₹70000 J	130000	130000
.3-Dichlorobenzene	_	_	_		13000	130000
.4-Dichlorobenzene	_	<u>-</u>	_	_	<b>2009</b>	3000 .
2-Dichlorobenzene	_	_	_	610000	390000	390000
-Methylphenol (o-cresol)	_	_	_	مستقطوان _	_	-
-Methylphenol (p-cresol)	_		-	_	21000 J	91000
litrobenzene	-	-	-	_	16000 J	(16000)
4-Dimethylphenol	_	_	-	-	9000 J	<b>65000</b>
4-Dichlorophenoi	_	19000 J	480 J	2800000	580000 E	370000
2.4-Trichlorobenzene	_	-	_	(20000 L)	84000	84000
laphthalene	-	_	-	-		- 7-5-
-Chigrogniline	_	2000	_	_	-	_
Methylnaphthalene	_		_	_		
4,6-Trichlarophenal	_	_	_	<b>₩</b>	93000	93000
4,5-Trichiorophenol	_	_	_		_	-
-Nilroeniine	_	-	_		_	· _
imethylphthelate	-	_	_	-	_	_
cenephthene	-	-	_	-	_	_
Nbenzofuran	-	-		-	_	-
iethytpinthelete	-	-	CHO?	_	_	-
luorene	-	_		_	_	-
Hitrapoline	_	_	_	-	_	_
I-Nitrosodiphenylamine	_	_	_		_	
Pentachiorephenol	_	_	-	_	25000 J	<b>(2000)</b>
Phononthrone	_		-	-	_	_
Vnthracene		_	_	-	-	-
Carbazole	_	-	_	-	_	
hi-m-butylphthelets	-	-	-	-	-	_
luoranthene	-	-	_	-	-	-
yrene	-	. <del>-</del>	-	_	-	_
Sutythenzylphthelete	-	-	-	-	-	-
J-Dichlorobenzidine	-	-	-	-	-	-
lenzo(a)anthracene	-	_	_	-	-	_
tinymene	-	-	-	-	_	-
ie(2-Ethylhexyl)phthelete	-	-	-	-	-	_
X-n-octylphthelate	-	-		-	-	-
lenzo(b)fluoranthene	_	_	-	-	-	-
erzo(it)fluerenthene	-	-	-	-	-	-
enzo(a)pyrene	-	-	-	-	-	
idens(1,2,3-od)pyrene	-	-	-	•	-	-
lenzo(g,h,i)perylene	_	-	-	-	-	_
allino	-		440 J		-	120000
-Chloroaniline	-	Z30000 J	590 J	-	170000	170000
-Chleregräine	-	<u>STO</u> 1	-	-		19000
otal SVOCs	480000	289900	3660	10830000	2736000	2156000

nayka nayka Micrograms per filer. Micrograms per kilogram, Estimated value.

D Concentration determined at a secondary dilution factor.

Unusable value.
Exceeded the instrument calibration range.
Not detected. RE

Semivolatile organic compounds. SVOCs

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

-			9400 J	-	-
-	39000 DJ	_	8000 J	29000 J	43000 J
_	_		-	-	_
_	_	_	-	_	_
_	_	_	_	_	_
_	_	<del>-</del>	<u>-</u>	_	_
<del>-</del>	-	-	-	_	<u>-</u>
	-	-	-	-	-
451	-	-		-	<del>-</del>
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
ars	-	-	-	-	_
	-	-	-	-	-
-	-	-	-	-	_
	-	-	-	-	-
-		_	-	-	-
-	-	-	-	-	-
-		-	-	-	••
-	700000 51		-	_	-
-		_	-	-	-
-	-	-	(Dames D)	-	-
-	-	-		-	-
-	-	-	-	-	-
-	-	-	-		-
_	-	-	-	-	-
-	-	_	_	-	-
_	-	-	(3000)	-	· <b>-</b>
-	,	· -		<b>,</b>	-
-	67,000	22 <b>900</b> J	640 J	42900 J	(130000 J
<b>201</b>	•	-	-	-	
	a company	_	9700 J	_	
24 J	27000	23000 J	1500 J	-	-
-	· -	′ –	940 J	_	<b>△70000</b> →
39 J	230000 EJ	150000	1800 J	120000 J	_69000
_	_	-		-	
	-	_	-	5700 J	Ø7000 ₽
_		33000 J	4800 J	59000	59000 J
_	905	_	_		-
	_	_		9100 J	440000
_	_	_	15000	-	<u>-</u>
<del></del>	204000 C3	129000	_		229000 3
430	260000 F I	120000	_	840000 I	220000 J
140 J	21000 J	460,000	<b>6500</b> J	2800000	899000
				<del></del>	
ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
5/21/92	5/21/92	5/21/92	5/22/92	5/26/92	5/26/92
16-18 ft	18-20 ft	30-32 ft	10-12 ft	20-22 ft	30-32 ft
	140 J 430 J - - - - - - - - - -	5/21/92 ug/kg  140 J 21000 J 430 J 260000 EJ	5/21/92 5/21/92 5/21/92 ug/kg  140 J 21000 J 460000  430 J 260000 EJ 120000	5/21/92 5/21/92 5/21/92 19/kg  140 J 21000 J 460000 6500 J  430 J 260000 EJ 120000	\$721/92 \$721/92 \$721/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/92 \$728/9

Micrograms per liter. ug/L ug/kg Micrograms per kliogram. Estimated value.

D Concentration determined at a secondary dilution factor.

R

Unusable value, Exceeded the instrument celibration range. Net detected.

Semivolatile organic compounds. SVOC8

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Total SVOCs	20940000	3827000	26300	549300	589980	1401000
-Chioroeniline	, -	_	-	-	ATTO DA	-
-Chioroaniline	<b>22000</b>	<b>⊅</b> 190000 J	-	8600 J	190000 D	160000
<b>nline</b>			•		_	_
enzo(g,h,i)perylene	_		_	-	-	-
ndeno(1,2,3-cd)pyrene	-	-	-	-	-	-
enzo(a)pyrene	-	••	_	_	-	-
enzo(k)fluoranthene	-	-	-	-	-	_
erzo(b)fluoranthene	-	-	-	-	-	_
I-n-actylphthelate	_	-	_	-	-	-
is(2-Ethylhexyl)phthalate	_	-	_	_	_	_
Irreene	_	_	_	-	-	-
enzo(a)anthrecene	-	-	-	_	_	_
3-Dichlorobenzidine	_	_	-	-		_
utylbenzylphthelate	_	-	_	_		-
Vrene	_		-	-	-	_
luoranthene	_	-	-	_	_	_
)i-n-butyiphtheiste	-	_	-	-	-	_
Carbezole	-			-	_	_
viihracene	_	· -	_	-	-	_
henenthrene	_	_	_	-	_	_
t-reachiorophenel	<u>-</u>	<del>-</del>	_	<b>4400</b>	<u>-</u>	-
-regularie I-Nitrosodiphenytamine	-	_			<del>-</del> -	
iuorene -Niiroeniine	-	<del>-</del>	-	ammay.	<b>-</b>	-
iethylphthelete	-	-	-	-	-	-
ibenzofuran	-	-	_	-	-	-
cenaphthene	-	-	, <del>-</del>	-	-	-
emethylphthelate	-			-	-	-
-Nitroeniline	-	-	-	-	-	• -
,4,5-Trichiorophenol	•	-	-	-	**	-
4,6-Trichlorophenol	420000	→ 54gp00	•••	2 <b>300</b> 0	<b>9600</b> J	54000
Methylnaphthalene		·		_	-	-
-Chloroeniline	-	-	_		<b>4000</b>	-
laphthalene	-	-	-	-		-
,2,4-Trichlorobenzene	-	· <del>-</del>	· <del>-</del>	(\$800_P)	3300 J	·
4.4-Dichlorophenol		2600,000 D	19000 J	46000	58000	240000
,4-Dimethylphenol	<u>-</u>	<b>-</b>	-	CIOCO	-	-
litrobenzene	580000	♪ 97000 J	-	1900 J	8500 J	-
l-Methylphenel (p-cresol)			-	R	-	-
!-Methylphenol (o-cresol)	-	` -	-	· -	-	-
,2-Dichlorobenzene	-	(3000 P)	-	1 <b>2000</b> J	6200 J	-
,4-Dichlorobenzene	_		-	-	-	-
,3-Dichlorobenzene	_	· <del>-</del>	-		· <del></del>	_
?-Chiorophenol	1100000	D 220,000 J		R	239000 D	950000
is(2-Chloroethyl)ether		<b>' -</b>		-	-	_
Phenol	640000	150000 J	7300 J	R		_
arameter						
	Units: ug/kg	ng/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample		5/28/92	5/28/92	5/29/92	5/29/92	5/29/92
Sample 1	Depth: 16-18 ft	18-20 ft	26-28 ft	6-8 ft	16-18 ft	28-30 ft

ug/L Micrograms per liter. ug/kg Micrograme per Idlogram. Estimated value.

D R Concentration determined at a secondary dilution factor.

Unusable value.
Esseeded the instrument calibration range.
Net detected.
Semivolatile organic compounds. Ε

SVOC#

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-16
Sample Depth:	30-32 ft
Sample Date: Units:	5/29/92
arameter	ug/kg
Thenol	420000 EJ
is(2-Chlorosthyl)ether	7
2-Chlorophenol	460000 EF
,3-Dichlorobenzene	-
1.4-Dichlorobenzene	-
1.2-Dichlorobenzene	_
2-Mathylphenal (o-cresol)	_
4-Methylphenol (p-cresol)	36000
Nitrobenzene	690
2,4-Dimethylphenol	
2,4-Dichlorophenol	420000 PJ
2,4-Dichlorophenol 1,2,4-Trichlorobenzene	TAINAN BU
	-
Naphthalene 4-Chloroaniline	-
	-
2-Methylnephthalene	£1000 I
2,4,6-Trichiorophenol	51000 J
2,4,5-Trichiorophenol	-
2-Nitroeniline	
Dimethylphthalate	-
Acenaphthene	-
Dibenzofuran	-
Disthylphtheiste	-
Fluorene	
4-Nitroeniline	-
N-Nitrosodiphenylamine	-
Pentachiorophenol	-
Phenenthrene	
Anthracene	-
Carbazole	••
Di-n-butylphthalate	-
Fluoranthene	-
Pyrene	-
Butylbenzylphthelate	-
3,3'-Dichlorobenzidine	-
Benzo(a)anthracene	_
Chrysene	
bia(2-Ethylhexyl)phthalate	_
Di-n-octylphtheiste	_
Benzo(b)fluoranthene	-
Benzo(k)fluoranthene	-
Benzo(a)pyrene	_
indeno(1,2,3-cd)pyrene	-
Benzo(g,h,i)perylene	_
Aniline	_
2-Chiorogniline	49000
3-Chioroeniline	
V	_
Total SVOCs	1436600
WE 31008	1-00000

ug/L		Micrograms per liter.
ug/kg		Micrograms per kilogram.
J	•	Estimated value.
D		Concentration determined at a secondary dilution factor.
R		Unueable value.
Ε		Exceeded the instrument calibration range.
		<u> </u>

SVOCs Semivolatile organic compounds.

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

•	Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank
	Sample Depth:	<del>-</del>					
	Sample Date:	4/9/92	4/10/92	4/13/92	4/14/92	4/16/92	4/21/92
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter							
Phenol		_	-	_	**		-
bis(2-Chloroethyl	ether	_				-	
2-Chlorophenol	,00.0		_	_	_	_	_
1,3-Dichlorobenz	ene		-		-	-	~
1.4-Dichlorobenz		_	_		_	-	_
1,2-Dichlorobenz		_	_		_		
2-Methylphenol (d	o-cresol)	_		-	-		
4-Methylphenol (j	o-cresol)	_	-	-	_	_	_
Nitrobenzene	, 0.000.,		-		_	_	_
2,4-Dimethylpher	noi	_	_		-	_	_
2,4-Dichlorophen			_		-	_	
1,2,4-Trichlorobe	nzené		_	_	_	-	-
Naphthalene		_	_	_	_	_	_
4-Chloroaniline		_	_	_	•••	-	
2-Methylnaphthal	lene -	-	-	_		-	
2,4,6-Trichloroph			_	_	_	_	_
2,4,5-Trichloroph		_	-	_	_	_	-
2-Nitroeniline		-	_	_	_	_	٠
Dimethylphthalati	•	_		_	-	-	_
Acenaphthene	-	_	_	_	-	_	_
Dibenzofuran		_		_	_	-	-
Diethylphthalate		_	_	_	_	_	_
Fluorene		_	_		_	_	-
4-Nitroaniline			_	_	-	-	_
N-Nitrosodipheny	damine	_	_	_	-		_
Pentachlorophen			-		_	_	-
Phenanthrene	•	_	_	-	_	-	
Anthracene		_	-	_	_	_	_
Carbazole		_	0.3 J		_	_	_
Di-n-buty/phthala	to	_	_	-	_	-	
Fluoranthene		_	-	_			_
Pyrene		_	1 J	_	-	_	_
Butylbenzylphtha	iste	_	-	_	_	_	_
3.3'-Dichlorobenz	zidine		-	_	_	_	
Benzo(a)anthrac		-	_			-	_
Chrysene		0.8 J	360 D	0.7 J	_	4 J	6
bis(2-Ethylhenyl)	phthalate	<del>-</del>	_	-	-		_
Di-n-octylphthale	te		_	-	_	_	-
Benzo(b)fluoranti	hene	-	_	_	_	_	_
Benzo(k)fluoranti		-	_	-	_	_	_
Benzo(a)pyrene		-	_	_	_	-	_
Indeno(1,2,3-cd)	ovrene	-	-	_	_	_	_
Benzo(g,h,i)peryl	ene	-	_	_	_	_	-
2-Chloroeniline		_	-	-	_	-	_
3-Chloroaniline		_	-	-	-		
Total SVOCs		0.8	361.3	0.7			€

ug/L Micrograms per liter. Micrograms per Idiogram. Estimated value. ug/ig

D Concentration determined at a secondary dilution factor.

RE

Unusable value.
Exceeded the instrument calibration range.

Not detected. Semivatelle organic compounds. SVOCS

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

;	Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank
	Sample Depth: Sample Date: Units:	4/23/92 ug/L	4/27/92 ug/L	5/4/92 ug/L	5/5/92 ug/L	5/6/92 ug/L	5/7/92 ug/L
Parameter		<del></del>		<del></del>		<del></del>	
Phonoi		_	0.4 J	-	<del>-</del>	_	_
bis(2-Chloroethyl	ether)	-	-	-	-	=	-
2-Chiorophenol	•		-	-	-	-	
1,3-Dichlorobenz	ene	-	-	-	-	_	_
,4-Dichlorobenz		_	_	-	-	_	_
1,2-Dichlorobenz	ene	_	_	_	-	_	_
2-Methylphenol (	o-cresol)	_	-		_	-	_
4-Methylphenol (	p-creeof)	_	-	-	_	-	_
Nitrobenzene		-	-	2 J	1 J	_	-
2,4-Dimethylpher	nol		-	_	_	_	-
2,4-Dichlorophen	ol	_	_	-	_		
1,2,4-Trichiorobe	nzene	_	-		_	-	-
Naphthalene		_	0.7 J	-		6 J	0.3 .
4-Chloroeniline		_	_		_	-	_
2-Methylnaphthal	ene	-	-		-	-	_
2,4,6-Trichloroph	enol	_	-	-	-	-	_
2,4,5-Trichloroph		-	-	-	_	-	-
2-Nitroeniline		-	-	-	_	_	· 🕳
Dimethylphthelet		-	-		-	-	-
Acenephthene		_	-	-	_	-	_
Dibenzofuran		_	-	_	_	-	_
Diethylphthalate		_	_	-	-	-	_
Fluorene		-	_		-	-	_
4-Nitroeniline		_	-		-	-	_
N-Nitroeodipheny	lamine	-	-	-	-	-	
Pentachlorophen		_	-	_	_	-	
Phenenthrene		_	-	_	-	-	-
Anthracene			-	-	_	-	
Carbazole		_	-	-	-	_	-
Di-n-butylphthele	te	_	-	-	-	_	_
Fluoranthene		-	-	-	-	-	_
Pyrene		_	. <b>-</b>		-	_	-
Butythenzylphthe	late	-	· •	_	-	-	-
3,3-Dichlorobenz	dine	_	-	-	_	-	_
Benzo(a)entivac			_	_	-	-	_
Chrysene		13 J	-	_	-	-	-
ois(2-Ethytheoyl)	chthalate	_	_	-	-	-	_
Di-n-octylphthele	<b>le</b>	-	_	-	-	-	-
Benzo(b)fluoranti	hene	-	-	-	-		_
Benzo(k)fluoranti			-	-	_	-	_
Benzo(a)pyrene		_	-	-	-	_	-
Indeno(1,2,3-cd)	yrene	_	-	-	_	-	-
Benzo(g,h,i)peryi	ene	-	-	_	-	-	-
2-Chloroeniline		-	-	-	_	-	-
3-Chloroeniline		-	-	-	-	-	-
Total SVOCs		13	1.1	2	1	6	0.3

ug/L Micrograms per iller. Micrograme per idlogram. Estimated value. ug/kg

Concentration determined at a secondary dilution factor. D

Unueable value.

Exceeded the instrument calibration range. Net detected. E

SVOCs Semirabile arganic compounds.

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Lo		juipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipmen Blant
Sample			<b>7</b> /4000	5/4.400	545 <b>m</b> 0	54000	
Sampi	e Date:	5/8/92	5/13/92	5/14/92	5/15/92	5/18/92	5/19/9
Parameter	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/l
Phenol			_		_	_	_
ois(2-Chloroethyl)ether		-		-	_	_	
2-Chlorophenol				_	_	_	_
.3-Dichlorobenzene		_	-	_		-	_
.4-Dichlorobenzene		-	_		-	_	_
,2-Dichlorobenzene		-	_		_	_	· _
2-Methylphenol (o-cresol)		-	_		_	_	_
-Methylphenol (p-cresol)			_		_	••	_
Vitrobenzene		_	_	_	_	_	-
2,4-Dimethylphenol		_		_	_	_	_
2,4-Dichlorophenol		••	_	_	_	_	-
1,2,4-Trichlorobenzene		-	_	-		_	_
Naphthalene		_	_	-	_	-	_
t-Chloroaniline		_	-	-	_	_	
2-Methylnaphthalene		-		_	_		-
2,4,6-Trichlorophenol		_		_	_	_	_
2,4,5-Trichlorophenol		_	_		_	_	_
2-Nitroeniline		_	_	_	_	_	
Dirnethylphthelete		_	-	_		_	
Acenaphthene		_	_	_	-	_	_
Dibenzofuran		_	_ _	-	_	-	_
Diethylphthalate			_	_	-	_	
Fluorene			_	_	-	_	_
I-Nitroeniline			_		_	_	_
V-Nitrosodiphenylamine		_	_		_	_	_
Pentachiorophenol		_	_	_	-		
Phenanthrene		_	_		_		_
Anthracene		_	_			_	_
Anthracene Carbazole		_		-	_	-	-
Jaroszow Di-n-butylphthalate			_	_	-		=
a-n-outypromises Fluoranthene		_	_	-	_		
		-		-	<del></del>	_	
Pyrene Budulbana dabbbalada		_		-	-	-	- F
Butylbenzylphtheiste 3,3'-Dichlorobenzidine		-	-	<del>-</del>		<del>-</del>	,
		-	<del>-</del>	-	<b>-</b>	<b>-</b>	-
Benzo(a)enthracene		-	-	-	<b>-</b>	_	-
Chrysene		-	<del>-</del>	-	<del>-</del>	-	-
ois (2-Ethylhexyl) phthalate		-	-	-	_	<del>-</del>	•
Di-n-octylphthelate		_	-	-	-	<del>-</del>	-
denzo(b)fluorenthene		-	-	-	-	<del></del>	•
Senzo(k)fluoranthene		-	-	-	-	-	-
Senzo(s)pyrene		-	-	-	-	-	-
ndeno(1,2,3-cd)pyrene		-	-	-	-	-	-
lenzo(g,h,i)perylene		-	-	-	-	-	•
2-Chloroaniline		-	-	-	-	-	-
3-Chloroeniline		_	-	-	-	-	-

ug/L Micrograms per liter. Micrograms per idlogram.

J Estimated value.

D Concentration determined at a secondary dilution factor.

R Unusable value.

E Exceeded the instrument calibration range.

Not detected.

SVOCs Semirolatile organic compounds.

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R. Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank
Sample Depth:		DIEN	DIEN		Dien in	DHEIR
Sample Date:	5/20/92	5/21/92	5/22/92	5/26/92	5/27/92	5/28/92
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameter			- Ugit			
Phenol	_	_	_		_	
ois(2-Chloroethyl)ether		_	_		_	_
2-Chlorophenol	_		_	<del>-</del>		_
,3-Dichlorobenzene	_	_	_	_	_	_
,4-Dichlorobenzene		_	_	_	_	_
2-Dichlorobenzene	_	_		_	_	_
2-Methylphenoi (o-cresol)	<u>-</u>	_	_		_	_
-Methylphenoi (p-cresol)	_		_	_	_	_
Nitrobenzene	_	_	_		_	_
au oper zene 2,4-Dimethylphenol	<u>-</u>	_	<u>-</u>	_	_	-
2,4-Dichlorophenol	_	<del>-</del> .		_ 1 J	_	_
1,2,4-Trichlorobenzene	_	_		-	-	_
Naphthalene	<u>-</u>	<b>-</b>		_	_	_
	_		-		_	
	_	_	<u>-</u>	_		-
2,4,6-Trichlorophenol	_	_	-	_	_	_
2.4.5-Trichiorophenoi	_	<del></del>			_	
2-Nitroaniline	<del>-</del>	<b></b>	-		<u>-</u>	
Dimethylphthalate		<u>-</u>	<del>-</del>		_	
Acenaphthene	<b>-</b>	_	<u>-</u>	_	_	_
Dibenzofuran	<b>-</b>		_	<del>-</del>	_	_
Diethylphthalate	_	_	_	_		_
Fluorene	_	_	_	-	_	_
l-Nitroeniline	-	_				_
V-Nitrosodiphenylamine	_	_	_		_	_
Pentachlorophenol	_	_		_	_	_
Phenanthrene	_		_	_	_	
Anthracene	_	_	_	_	_	_
Carbazole	_	_		_	_	_
Di-n-butylphthalate	_		-	_	_	_
luoranthene	_			_	_	_
Pyrane	_	_	_	_		_
Butylbenzylphthelate	R	R	_	-		_
3,3'-Dichlorobenzidine	_	-	_		_	
Benzo(a)anthracene	_	_	_	_	_	_
Chrysene	_	_	_	-	_	_
oia(2-Ethylhaxyl)phthalate	_	_	_	_		-
Di-n-ectylphthalate	_	_	_	_	<del>-</del>	_
Benzo(b)fluoranthene	_	_	_	_	_	_
	_	_	_	<del>-</del>	_	_
Benzo(k)fluoranthene Benzo(a)pyrene	_	_	_	_	_	
ndeno(1,2,3-cd)pyrene	_	_	_	_	_	_
Ruero(1,2,3-cu)pyrere Benzo(g,h,i)perylene	_	_		_	_	_
?-Chloroeniline	_	_	_	_	_	_
3-Chloroeniline	_	_	<del>-</del>	_ <del>_</del>	<del>-</del>	-
Fotal SVOCs				1		

ug/L Micrograms per liter. Micrograms per kilogram. ug/kg Estimated value.

D Concentration determined at a secondary dilution factor.

R Unusable value.

Exceeded the instrument calibration range. Not detected. Ε

Semivalable organic compounds. SVOCs

Table 5-9. Summary of Target Compound List Semivolatile Organic Compounds Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

	Equipment Blank	
Sample Depth: Sample Dete: Units:	5/29/92	
Parameter	ug/L	
Phenoi	5 J	
is(2-Chloroethyl)ether	-	
2-Chlorophenol	-	
,3-Dichiorobenzene		
,3-Dichlorobenzene	-	
	-	
,2-Dichlorobenzene	-	
2-Methylphenol (o-cresol)	1 J	
l-Methylphenol (p-cresol)	3 J	
Vitrobenzene	-	
2,4-Dimethylphenol	-	
2,4-Dichlorophenol	-	
,2,4-Trichlorobenzene	_	
Vaphthelene	8 J	
I-Chloroaniline	_	
2-Methylnephtheiene	2 J	
2,4,6-Trichiorophenol	-	
4,5-Trichlorophenol	_	
-Nitroeniline	-	
Dirnethylphthalate	-	
cenaphthene	_	
Dibenzofuran	-	
Distry/phthaiste	<del>-</del>	
iluorene	_	
-Nitroeniine	_	
I-Nitrosodiphenylemine	-	
Pentachiorophenol	-	
Phenenthrene	-	
Inthracene	-	
Carbazole	-	
Di-n-butylphthelate		
fluoranthene	_	
Pyrene	-	
Sutylbenzylphthalate	-	
3'-Dichlorobenzidine	_	
Senzo(a)enthracene	_	
Chrysene	6 J	
is(2-Ethylhexyl)phthelete	-	
X-n-octylphthelete	_	
Senzo(b)fluoranthene	_	
lenzo(k)fluoranthene	<del>-</del>	
	<del>-</del>	
lenzo(a)pyrene	-	
ndeno(1,2,3-cd)pyrene	-	
lenzo(g,h,i)perylene	-	
-Chloroeniline	-	
-Chloroeniline	-	
otal SVOCs	25	

ug/L Micrograms per iller. ug/kg Micrograms per kilogram. Estimated value. D Concentration determined at a secondary dilution factor.

R Unusable value. Ε Exceeded the instrument calibration range.

Not detected. Servivolatile organic compounds. SVOCs

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	S <b>B</b> -1	SB-1	SB-1	SB-2	SB-2	SB-2	SB-3
Sample Depth:	12-14 ft	26-28 ft	32-34 ft	12-14 ft	14-16 ft	28-30 ft	12-14 ft
Sample Date:	4/9/92	4/9/92	4/9/92	4/10/92	4/10/92	4/13/92	4/16/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter							
Pesticides/PCBs							
bets-BHC	-	_	-	-	-	-	_
delta-BHC	-	-	-	-		_	_
Heptachior epoxide	_	_	-	-	-	-	_
Endoculfan I	-	-	-	-	3000 JN	R	-
I,4-DDE	-	-	-	-	-	-	22000 J
Endrin	_	R	R	-	-	-	4600 J
Endoculfan II	R	-	-	-	R	-	-
4,4'-DDD	-		-	-	-	~	-
4,4-DDT	-	-	-	1400	-	-	-
Methoxychlor	-	••	-	-	-	~	-
Endrin ketone	R	R	R	-	R	R	R
Endrin aldehyde	-	-	-	-	-	-	5900 JI
niphe-Chiordene	• -	-	-	-	_	-	· <del>-</del>
gamma-Chlordane	_	-	_	-	_	-	-
Araciar-1248	-	-	-	-		-	4800000 J
Aroclor-1254	-	_	-	-	_	-	-
Aracier-1280	-	-	-	-	-	-	-
Herbicides							
2, <b>4-</b> D	NA	NA	NA	NA	NA	NA	NA

ug/kg Micrograms per kilogram.

ug/L Micrograms per liter.

D Concentration determined at a secondary dilution factor.

NA Not analyzed.

J Estimated value.

R Unusable value.

N Presumptive evidence of the compound present.

Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R. Monsanto Company, Sauget, Illinois.

Sample Location:	S8-3	SB-3	S8-4	SB-4	SB-4	SB-5	SB-5
Sample Depth:	14-16 R	32-34 ft	10-12 ft	12-14 ft	30-32 ft	12-14 ft	20-22 ft
Sample Date:	4/16/92	4/16/92	4/14/92	4/14/92	4/14/92	5/4/92	5/4/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter	- <b>3</b> -4	4		og ng	9		ograg
		·				<u></u>	
Pesticides/PCBs							
beta-BHC	_	-	7600 JN	_	-	-	_
delta-BHC	_	-	-		-	-	-
Heptachior epoxide	-	-	-	-	-	-	-
Endosulfan I	-	-	_	-	_	-	-
4.4-DDE	-	-	-		-	-	-
<b>Endrin</b>		-	-	-	-	-	-
Endoculian II	-	3300	R		-	-	-
4, <b>4'-</b> DDD	720	-	-		-		-
4, <i>4</i> -DDT	_	_	52000	_	-	-	-
Methoxychlor	-	-	-	-	-	-	_
Endrin kutone	R	15000	4600	_	MC 00000	11000	-
Endrin aldehyde	2000 J	-	-	-	-	_	-
niphe-Chlordene	-	420	-	_	-	-	-
gemme-Chlordene	-	-	-	-	-	-	· -
Arector-1248	800000 J	-	-		-	470000 J	<b>62000</b> J
Aroclor-1254	-	-	-	-	-	11 <b>00000</b> J	120000 JI
Arecter-1260	-	-	_	100000	-	_	-
Herbicides							
2, <b>4-</b> D	NA	NA	NA	NA.	NA	NA	NA

ug/kg Micrograms per Idiogram.

Micrograms per liter. ug/L

Concentration determined at a secondary dilution factor. D

NA Not analyzed. Estimated value.

Unusable value.

Presumptive evidence of the compound present.

Not detected.

Polychiorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Commis I section:	SB-5	SB-6	SB-6	SB-6	SB-7	SB-7	60.7
Sample Location: Sample Depth:	36-3 28-30 ft	56-6 18-20 ft	20-22 ft	28-30 ft	36-7 16-18 ft	20-22 ft	SB-7 24-26 ft
Sample Deptn: Sample Date:	26-30 ft 5/4/92	16-20 π 5/5/92	20-22 ft 5/5/92	26-30 ft 5/6/92	5/7/92	20-22 K 5/7/92	24-20 π 5/7/92
Sample Date. Units:							
Units: P <b>arameter</b>	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	<del> </del>		·		<del></del>		
Pesticides/PCBs							
oute-BHC		_	_	-	-	-	_
ielta-BHC	-	-	_	-	_	-	-
Heptechior eposide	_	<b>600</b> D1	-	-	-	-	_
Endoculian I		-	-	-	-	-	_
4,4-DDE	-	-	-	-	-	-	-
<b>Endrin</b>	-	-	-	-	-	-	-
Endocultan II	-	-	45000 DJ	-	-	-	
4, <b>4</b> -DDD	-	-		-	-	-	-
4, <b>4-D</b> DT	-		-	-		-	-
Methoxychior	-	-	-		-	-	-
Endrin katone	-	-	-	_	-	-	-
Endrin aldehyde	-	-	29000 DJ	-	· -	_	_
hiphe-Chlordene	-	1700 DJ	-	-	-	-	• -
gamme-Chlordane	-	306 J	-	-	_	_	-
Arocior-1248	12000 J	-	1200000 DJ	26000 J	-	-	-
Aroclor-1254	22000 J	-	-	-	-	-	-
Arociar-1260	-	-	_		-		-
terbicides							
2, <b>4-</b> D	NA	NA	NA	NA	NA	NA.	NA

D Concentration determined at a secondary dilution factor.

NA Not analyzed.

J Estimated value.

R Unusable value.

N Presumptive evidence of the compound present.

Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

2,4-D	NA	NA	NA	NA	NA	970 J	NA
Herbicides							
Aroclor-1280	-	3700 J	1000 J	14000 J	100000 J	9600 J	34000
Aroclor-1254		-	-		-		-
Arocior-1248	270000 J	16000 J	7200 J	7000 J	160000 JN	139000 J	130000
gemme-Chlordene	-	_	_	-	-	450 J	620
sipha-Chiordane	-	-	-	-	_	-	- 290
Endrin aldehyde	R	-	-	-	-	-	-
Endrin isstone	-	-	-	-	-	-	-
Methoxychior		-	-	-	R	_	-
4,4'-DDT	_	_	_	_	-	-	-
4,4'-DDD	-	-	-	_	-	_	_
Endoeulfan II	3500 J	-	· _	_	-	1100 J	-
Endrin .	_	_		-	_	-	_
4.4-DOE	-	_	-	-	-	-	_
Endoculfon i	-	_	_	-	-	-	_
Heptachior eposide	_	_	_		_	440 J	330 R
beta-BHC delta-BHC	<b>-</b>	<del>-</del>	-	<del>-</del>	-	-	330
Pesticides/PCBs							
Parameter							
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Sample Date:	5/8/92	5/13/92	5/13/92	5/13/92	5/13/92	5/14/92	5/14/92
Sample Depth:	6-8 ft	18-20 ft	20-22 ft	28-30 ft	30-32 ft	6-8 ft	18-20 ft
Sample Location:	SB-8	SB-9	SB-9	SB-9	SB-9	SB-10	SB-10

D Concentration determined at a secondary dilution factor.

NA Not analyzed.

J Estimated value.

R Unusable value.

N Presumptive evidence of the compound present.

- Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

2000	NA .	1700	-	7.5 J	NA	3200
24000 J	-	-	-	-	-	-
-	-	11 <b>000</b> J	-	_	-	
<b>49000</b> J	25000 J	19000 J	8400 J	-	900000 1	75
-	-	-	-	-		-
•	-	-	_		-	
-	_	-	_	_	_	-
_	-	_	-	-	_	-
_	_		-	_	-	-
_	_	-	-	_	_	-
_	-	_	-	-	_	_
_	R	• -	_	_	6100 J	_
_	_	_	_		_	_
400	_	_	-	_	_	_
-	_	-	_	_		_
_		-	_	_	_	_
_	_	<del>-</del>	_	_	-	-
		<del></del>				
99.4	99.49	og ng	ug ng		og ng	ograg
						ug/kg
						5/18/92
SB-10	SB-11	SB-11	SB-11	SB-12	SB-12	SB-12 32-34 ft
	24000 J	5/14/92 5/19/92 ug/kg ug/kg ug/kg ug/kg ug/kg	5/14/92 5/19/92 5/19/92 ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg	5/14/92	5/14/92	5/14/92

D Concentration determined at a secondary dilution factor.

NA Not analyzed.

J Estimated value.

R Unusable value.

N Presumptive evidence of the compound present.

Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-13	SB-13	SB-13	SB-14	SB-14	SB-14	SB-15
Sample Depth:	16-18 ft	18-20 ft	30-32 ft	10-12 ft	20-22 ft	30-32 ft	16-18 ft
Sample Date:	5/21/92	5/21/92	5/21/92	5/22/92	5/26/92	5/26/92	5/27/92
Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Parameter		······································					
Pesticides/PCBs							
beta-BHC	_	_		_	-	_	_
delta-BHC	-	_	_		_		_
Heptachior epoxide	-	-	-	-	_		-
Endoeulfan I	-	-	-	_	_	_	_
4,4-DDE	-	-	-	-	-	_	-
Endrin		_	-	-	-	-	_
Endosulfan II	-	-	-		-	-	-
4,4'-DDD	_	_	-	-	_	_	-
4,4'-DDT	_	-	-	-	••	-	R
Methoxychlor	-	-	-	-	-	_	-
Endrin katone	-	_	-	-	_		-
Endrin aldehyde	-	-	-	-		_	-
siphe-Chlordane	-	-	-	-	-	-	
parnma-Chiordene		_	-	_	-	-	-
Aroclor-1248	_	-	_		-		-
Aroclor-1254	_	-	-	-	-	-	-
Aroclor-1260	-	-	-	-	-	-	-
<u>Herbicides</u>							
2,4-0	110	NA	96	NA	23000	130000	720000

D Concentration determined at a secondary dilution factor.

NA Not analyzed.
J Estimated value.
R Unusable value.

N Presumptive evidence of the compound present.

- Nat detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monaanto Company, Sauget, Illinois.

						00.40
Sample Location:	SB-15	SB-15	SB-16	SB-16	SB-16	SB-16
Sample Depth:	18-20 ft	26-28 ft	6-8 ft	16-18 ft	28-30 ft	30-32 ft
Sample Date:	5/28/92	5/28/92	5/29/92	5/29/92	5/29/92	5/29/92
Units:	ug/kg	nayea	ug/kg	ug/kg	ug/kg	ug/kg
arameter						
sticides/PCBs						
ta-BHC	_	_	_	_	_	_
elta-BHC	-	-	-	-	_	-
eptachior eposide	_	-	_	-	-	_
ndoeulfan i	-	-	-	-	-	-
.4-DDE	••		-	240 J	-	_
ndrin	-	-	-	-	-	19
ndoeulfan II	-	_	_	_	-	_
,4°-DDD		-	-	-		_
, <b>4-DD</b> T	_	-	420	-	11 J	_
lethoxychlor	-	-	-	-	-	_
ndrin lesione	-	-	-	-	-	_
ndrin aldehyde	-		R	-		-
phe-Chiordene	-	-	-	-	-	
emme-Chlordane	_	-	-	-	_	_
roctor-1248	_	-	-	-	-	
rocior-1254	-	-	-	-	-	_
roctor-1280	-	-	-	••	-	-
<u>erbicides</u>						
<b>H</b> D	NA	5200	NA	310	8900	NA

ug/kg	Micrograms	per idlogram.
a second	h.Manner	and Mar

D Concentration determined at a secondary dilution factor.

NA Not analyzed.
J Estimated value.
R Unusable value.

N Presumptive evidence of the compound present.

Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank						
Sample Depth:							
Sample Date:	4/9/92	4/10/92	4/13/92	4/14/92	4/16/92	4/23/92	4/27/92
Units:	ug/L						
arameter							<del></del>
esticides/PCBs							
eta-BHC	-	-	_	_	_	-	-
etta-BHC	_	-	-	_	-	-	-
leptachior epoxide	_	_	-	_	-	-	-
ndoculfan l	-	_	-	-	-	-	•
,4-DDE	-	-	_	-	-		-
indrin	-	-	-	-	-	-	-
indosulfan II	_	-	_	-	-		-
,4-DDD	-	-	-	-	-	-	-
,4-DDT	-	-	-	-	-	-	-
<b>lethoxychiar</b>	-	-	-	-	-	-	-
indrin ketone	-	-	-	-	-	-	-
indrin aldehyde	_	-	-	-	-	-	-
ipha-Chiordana	-	-	-	-	-	_	• -
amme-Chiordane	-	-	-	-	• -	-	-
roctor-1248	-	-	-	-	-	-	-
roctor-1254	-	-	_	_	-	-	-
roctor-1280	-	-	-	-	-	-	-
lerhicides							
,4-D	NA	NA	NA.	NA.	NA.	NA	NA

ug/kg Micrograms per kilogram.

ug/L Micrograms per liter.

D Concentration determined at a secondary dilution factor.

NA Not analyzed.
J Estimated value.
R Unusable value.

N Presumptive evidence of the compound present.

- Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, illinois.

Sample Location:	Equipment Blank						
Sample Depth:							
Sample Date:	5/4/92	5/5/92	5/6/92	5/7/92	5/8/92	5/13/92	5/14/92
Units:	ug/L						
Parameter							
Pesticides/PCBs		•					
ets-BHC	-	_	_	-	_	_	
letta-BHC	_	_	-	÷	_	_ •	
leptachlor epoxide	-	-	-	-		-	-
Endocutten I	-	-	-	_	-	_	_
I,4-DDE	-	-	-		_	-	-
Endrin	-	-	-	-	-	-	
Endosulfan II	-	-	-	_		_	-
I,4-DDD	_		_	-	-	-	
I,4'-DDT	-		-	-	-	-	-
Aethoxychior	-		-	-	-	-	-
Endrin ketone	-		-	-	-		
Endrin aldehyde	_	-	-	-	-	-	_
iphe-Chlordene	-	-	-	-	-	_	
amme-Chlordene	_	_	-	-	-	-	-
Vrocior-1248	-	-	-	-	-	_	••
Vroctor-1254	-	-	-	-	-	-	-
krocior-1260	-	-	-	_	-	-	-
terbicides							
2, <b>4-</b> D	NA	NA	NA.	NA	NA	NA.	NA

D Concentration determined at a secondary dilution factor.

NA Not analyzed.
J Estimated value.

R Unuable value.

N Presumptive evidence of the compound present.

Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Moneanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank						
Sample Depth:							
Sample Date:	5/15/92	5/18/92	5/19/92	5/20/92	5/21/92	5/22/92	5/26/92
Units:	ug/L						
'arameter							
esticides/PCBs							
eta-BHC	_	_	-	_	_	-	_
eta-BHC	-	-	_		-	-	-
leptachior epoxide	-	-	_	-	-	-	-
ndosulfan I	_	-	-	_	-	_	-
,4-DDE	_	-	_	-	-	_	-
indrin	-	-	-	-	-	-	-
indosulfan II	-	-	· _		-	-	-
,4-DDD	-	-	-	-	-	-	-
,4-DDT	-	_	-	-		-	_
Authoxychior	-	-	_	-	-	-	-
indrin ketone	-	-	-	-	-		-
indrin aldehyde	-		-	-	-	-	-
ipha-Chlordane	_	-	-	-	-	-	
amma-Chlordane	-	_	-	-	-	-	-
rocior-1248	-	-	_	-	_	-	-
roctor-1254	-	_	_	_	-		-
rocior-1260	-	-	-	-	-	_	
larbicidas							
. <b>4-</b> D	NA	NA.	NA.	NA.	NA	NA.	NA

D Concentration determined at a secondary dilution factor.

NA Not enelyzed.
J Estimated value.
R Unueable value.

N Presumptive evidence of the compound present.

Not detected.

PCBs Polychlorinated biphenyls.

Table 5-10. Summary of Target Compound List Pesticides, PCBs, and Herbicides Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	
Sample Depth:				
Sample Date:	5/27/92	5/28/92	5/29/92	
Units:	ug/L	ug/L	ug/L	
Parameter				 
Pesticides/PCBs				
beta-BHC	-	_	_	
delta-BHC	_		_	
Heptachlor epoidde		_	-	
Endoculfon I	-	-	-	
4,4'-DDE	_	_	-	
Endrin	_	-	-	
Endosulfan II	-	-	_	
4, <i>4</i> -DDD	-	-	••	
4,4'-DDT	-	-		
Methoxychlor	-	-	-	
Endrin ketone	-	-	-	
Endrin aldehyde	-	-	-	
alphs-Chlordane	-	-	_	
gamma-Chlordane	-	-	-	
Arocior-1248	-	-	-	
Aroclor-1254	-	-	-	
Aroclor-1260	-	-	-	
Herbicides				
2, <b>4-</b> D	NA	NA	NA	

ug/kg Micrograms per kilogram.

ug/L Micrograme per liter.

D Concentration determined at a secondary dilution factor.

NA Not analyzed.

J Estimated value.

R Unusable value.

N Presumptive evidence of the compound present.

- Not detected.

PCBs Polychlorinated biphenyls.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-1	SB-1	SB-1	SB-2	SB-2	SB-2	SB-3
Sample Depth:	12-14 ft	26-28 ft	32-34 ft	12-14 ft	14-16 ft	28-30 ft	12-14 ft
Sample Date:	4/9/92	4/9/92	4/9/92	4/10/92	4/10/92	4/13/92	4/16/92
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Parameter	<del></del>						
Muminum	7890	6350	8880	4080	3280	10100	3870
Antimony	-	-	-	-	-	_	-
<b>Vrsenic</b>	6.6	-	4.5	3.7	-	4.7	-
<b>Serium</b>	71.1	180	237	<del>8</del> 2.8	62.2	117	70.8
Berydlum	-	-	-	-	-	-	-
Cadmium	_	_	-		-	_	-
Calcium	11500	12700	15800	7580	4670	7620	5860
Chromium	20.4 J	11.6 J	14.7 J	13.0 J	11.4 J	14.7 J	19.6
Cobelt	27.1	18.6	17.9	81.5	43.6	10.9	16.5
Copper	78.8 J	13.4 J	15.2 J	183 J	120 J	16.6 J	219
ron	12100	10100	14600	10100	11000	13900	13500
_eed	16.8 J	6.8 J	10.3 J	8.1 J	3.6 J	10.6 J	6.0
Agnesium	858 B	<b>536</b> 0	5930	540 B	291 B	4700	335
Vanganese	<b>59.8</b>	209	734	73.8	38.3	623	29.9
viercury	0.44	_	-		-	_	-
Nickel .	<b>65</b> .5	21.9	28.8	20.4	26.1	24.0	40.2
Polessium	580	1360	1730	501	432	1670	495
Selenium		_	-	-	-		_
Sadium	423 8	573 B	2050	606 B	250 B	3190	339
/anadium	183 J	21.1 J	25.4 J	17.5 J	13.3 J	27.3 J	13.6
Zinc	167 J	<b>39.6</b> J	52.9 J	61.5 J	53.9 J	R	79.7
Cyanide	_		_		_	_	-

Not detected.

ug/L Micrograms per liter. mg/lig Milligrams per kilogram.

J Estimated value.

R Unusable value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-3	SB-3	SB-4	SB-4	SB-4	SB-5	SB-5
	35-3 14-16 ft			12-14 ft	30-32 ft	12-14 ft	
Sample Depth:		32-34 ft	10-12 R	· -			20-22 ft
Sample Date:	4/16/92	4/16/92	4/14/92	4/14/92	4/14/92	5/4/92	5/4/92
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Parameter							
Muminum	4980 J	8460 J	3630	3740	6630	861	8220
<b>Antimony</b>	-	-	-		-	-	-
Arsenic	3.2	5.2	-	4.1	-	-	8.6
Berium	197	155	247	162	129	68.2	167
Beryttum	-	-	-	-	-	-	-
Cadmium	-	-	-		-	_	-
Calcium	7520	8720	8690	8090	12700	13900	13800
Chromium	27.0	14.5	A52	10.0	24.0	18.7	23.4
Cobalt	<b>59</b> .0	19.8	( 83.2)	71.2	10.4 B	2.4 B	7
Copper	82.8 J	14.8 J	77.6	129	12.4	18.9	320
iron	16300	13600	12600	13000	8540	4250	27290
Lead	17.2 J	13.4 J	6.3 J	7.2 J	3.2 J	2.1 J	9.1
Magneeium	577 B	4080	337 B	320 B	2110	71.8 B	1890
Manganese	43.6	543	58.1	65.3	81.7	6.0	94,2
Mercusy	0.96	-	0.08	$\sim$	-	-	0.12
<b>Nickei</b>	44.4	17.4	52.6	<b>59.3</b>	12.5	-	24.3
Potaesium	526 B	1280	461 B	496 B	1100 B	-	1050
Selenium	-	-	_		-	R	R
Bodium	766 B	1690	405 B	278 B	1260	164 B	1270
Vanadium	16.5	21.7	16.9	17.3	18.5	6.0 B	26.4
Zinc	64.6	52.9	125 J	114 J	-	-	-
Cyanide	-	-	-	-	-	-	_

Not detected.

ug/L Micrograme per liter. rng/kg Milligrams per kilogram.

J Estimated value.

R Unusable value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-5	SB-6	SB-6	SB-6	SB-7	SB-7	SB-7
Sample Depth:	28-20 ft	18-20 ft	20-22 ft	28-30 ft	16-18 ft	20-22 ft	24-26 ft
Sample Date:	5/4/92	5/5/92	5/5/92	5/7/92	5/7/92	5/7/92	5/7/92
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Parameter							
Aluminum	11600	1360	1870	7190	4410	4620	3330
Antimony	_	-	<b>-</b>	-	-	_	· _
Amenic	9.4		_	6.4	5.7	5.7	3.7
Bartum	255	300	293	132	170	158	154
Beryllum	_	_	-	· <b>-</b>	-	-	_
Cadmium	-	-	-	-	_	-	_
Calcium	15000	15800	13000	8920	8430	9540	11500
Chromium	16.8	6.8 J	6.7 J	13.0	10.9	23.0	9.1
Cobalt	23.6	23.1	27.4	11.1 B	89.2	51.3	21.5
Copper	54.6	12.9	27.0	16.0	137	126	58.0
tron	18100	3300	1760	9050	9640	11400	8010
Leed	11.7 J	21.1	24.4	8.2 J	5.5 J	5.5 J	5.8
Megnecium	7050	726 B	677 B	2180	4410	5220	5320
Manganese	787	4.8	2.9	132	93.5	92.3	114
Mercury	_	1.5	0.27	0.16	0.27	0.43	
Nickel	26.7	_	14.0	14.4	11.1	14.9	10.2
Palaneium	2250	795 B	521 B	1180 B	1060 B	1190 B	746
Selenium	R	_	-	R	R	R	R
<b>Sodum</b>	6610	1700	1810	2050	269 B	564 B	1130
Vanedium	27.8	_	-	22.7	47.9	32.4	19.4
Zinc	_	18.6	19.3	36.5	132	86.8	36.1
Cyanide	_	_	_	-	_	_	_

Not detected.

ug/L. Micrograms per liter. mg/lig Milligrams per kilogram. 3 Estimeted value.

R Unusable value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-8	SB-9	SB-9	SB-9	SB-9	SB-10	SB-10
Sample Depth:	6-8 ft	18-20 ft	20-22 ft	28-30 ft	30-32 ft	6-8 ft	18-20 ft
Sample Date:	5/8/92	5/13/92	5/13/92	5/13/92	5/13/92	5/14/92	5/14/92
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Parameter						<del></del>	
مستسيخ	#000	4729 J	4640 J	2360 J	17000 J	<b>6290</b> J	7380
Antimony	1924 1944 - Lindon State (1944) 1944 - 1944	R	R	R	R	R	R
<b>Americ</b>	5.0	3.8	5.6	3.9	5.3	147	14.9
Barium	" <b>'33</b> 1"	210	195	61.3	198	114	111
Bendium	_	٠. 🚗	-	-	-	1.7	-
Cadmium	1.2	″ 1. <b>2</b>		-		4.3	1.2
Calcium	8620	10800	18500	7390	9080	14600	14700
Chromium	20.4	21.6	21.9	6.6	23.1	32.0	41.0
Cobalt	6.1 B	25.5	3.5 8	6.3 B	15.2	9.6 B	25.0
Copper	40.6	31.4	20.4	10.9	21.0	_40.7	51.7
iran	15900	42400	12300	6230	21200	(42500)	34600
Leed	15.1 J	19.5	8.6	4.4	12.9	15.6	26.8
Magnesium	3810	3060	1710	2550	4610	1290	561
Manganese	297	125	96.1	134	<b>62</b>	134	102
Mercury	0.80	0.24	1.1		<u></u>	1.5	0.51
<b>Nickel</b>	16.6	24.0	9.9	11.9	25.7	38.4	67.7
Polassium	671 B	1330	1450	458 B	2530	1620	م
Selenium	R		-	-	-	2.8 J	4.2
Sodium	_	1140	1760	2150	4640	2870	1140
Venedium	24.5	36.8	27.1	24.9	35.5	645	_90.2
Zinc	336	175	43.1	33.1	72.7	718	2629
Cyanide	_	-	_	_	-	-	_

Not detected.

ug/L Micrograms per liter.

mg/lig Milligrams per kilogram.

J Estimated value.

J Estimated value. R Unusable value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-10	SB-11	SB-11	SB-11	SB-12	SB-12	SB-12
Sample Depth:	24-26 R	14-16 R	16-18 ft	30-32 ft	8-10 ft	22-24 ft	32-34 ft
Sample Date:	5/14/92	5/19/92	5/19/92	5/20/92	5/15/92	5/18/92	5/18/92
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Parameter							
Numinum	2250 J	3460	3430	10200	5710 J	1 <b>00</b> 0 J	11900
<b>Untimony</b>	R	_	_	_	R	R	R
Vreenic	_	6.2	4.0	5.9	9.3	_	-
Bartum	85.8	89.6	73.0	173	86.4	49.6	260
Beryllum	-	-	-	_	-	-	-
Cadmium	-	-	-	_	1.5	-	-
Calcium	<b>695</b> 0	21600	12200	7540	31100	3130	9990
Chromium	6.3	29.2	13.3	14.9	27.5	3.5	18.5
Cobalt	4.2 B	4.1 B	4.4 B	8.2 B	8.4 B	2.5 B	9.4
Copper	-	24.9	12.5	15.4	20.6	-	15.7
ran	6220	16900	11600	16200	33900	3670	14400
Lead	4.1	13.7	9.2	10.6	. 12.1	3.2	12.4
Vegneelum	2620	679 B	635 B	3670	785 B	1490	5410
Venganese	78.9	_119	97.8	703	125	80.0	325
Mercury	_	43.0	1.3	-	19.4	0.33	-
Victor	-	18.6	11.6	17.8	27.6	-	21.2
Poteooium	562 B	759 B	578 B	1690	791 B	314 B	1720
Setenium	_		-	-	-	_	_
iodium	409 B	3480	2180	_	485 B	1240	5090
Vanadium	9.1 B	17.4	15.5	24.4	36.5	5.5 B	27.9
<b>Tinc</b>	32.5	81.9	106	-	146	-	95.4
Cyanide	-		-	_	-	_	(0.33)

<sup>--</sup> Not detected.

ug/L Micrograms per liter.

mg/kg Milligrams per kilogram.

J Estimated value. R Unuaable value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-13	SB-13	SB-13	SB-14	SB-14	SB-14	SB-15
Sample Depth:	16-18 ft	18-20 ft	30-32 ft	10-12 ft	20-22 ft	30-32 ft	16-18 ft
Sample Date:	5/21/92	5/21/92	5/21/92	5/22/92	5/26/92	5/26/92	5/27/92
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Parameter					· ·		
Numinum	12200	12900	9010	3620	8410	6030	6470
<b>Intimony</b>	-	-	-	_	-	_	-
<b>Vreenic</b>	81.7	<b>89</b> .6	5.3	11.9	9.1	4.8	
Barium	114	129	209	70.8	181	180	40.0
Beryllium	3.1	2.8	-	1.7	-	-	_
Cadmium	5.5	7.0	_	-	1.5	-	-
Calcium	26300	21300	11400	14800	13700	12800	12000
Chromium	39.5	40.9	14.0	11.7	17.6	11.5	18.9
Cebalt	11.1 B	11.5 B	7.0 B	7.9 B	9.4 B	6.3 B	3.3
Copper	29.5	31.7	13.3	22.7	19.3	9.9	13.2
	21000	64.7	13000	-	16600	11800	16700
.eed	59.4	64.7	9.1	14.1	45.0 J	8.2 J	5.0
/legnesium	2570	Control (Control Control	- <b>5,0010</b>	1110 B	4350	5380	546
Aanganese	262	206	312	57.7	144	471	61.4
Aercury	0.14	-	-	4.8	6.1	-	3.1
Vickel	37.9	40.3	17.5	19.8	17.9	16.1	18.1
Potesekum	1570 B	1950	1550	536 B	1930	1160 B	556
Selenium	2.4 J	1.9 J	-	1.7 J	_		-
Bodium	591 B	1500 B	1530	-	679 B	2260	-
/anadium	77.9	82.7	24.2	21.5	26.4	18.5	28.6
Zinc	491	602	53.2	52.9	94.2	37.8	84.5
Cyanide	_	-	-	-	-	-	

Not detected.

ug/L Micrograms per iller. mg/kg Milligrams per kliogram. J Estimated value.

J Estimated value. R Unuastie value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	SB-15	SB-15	SB-16	SB-16	SB-16	SB-16
Sample Depth:	18-20 ft	26-28 ft	6-8 ft	16-18 R	28-30 ft	30-32 ft
Sample Date:	5/28/92	5/28/92	5/29/92	5/29/92	5/29/92	5/29/92
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Parameter						
Muminum	5240	230	7100	5290	6240	11400
<b>Untimony</b>	-	_		-	-	-
<b>Vreenic</b>	4.3	-	8.1	6.5	3.6	12.6
<b>Serium</b>	76.2	32.0 B	117	169	147	219
Beryllium	-	-		-	-	••
Cadmium	-	-	-	_	-	<b></b> (
Calcium	9040	2050	85800	8690	9970	14900 `
Chromium	25.4		21.1	11.1	9.8	16.9
Cobalt	3.8 B	-	6.6 B	5.4 B	7.6 B	9.0 B
Copper	76.4	_	21.9	12.8	7.1	14.6
ron	9600	-	17400	12200	13900	17300
.eed	8.8 J	2.4 J	14.3 J	15.5 J	7.4 J	14.5 J
vlagneelum	1110 B	73.5 <del>B</del>	<b>8</b> 570	3420	4960	6630
Manganese .	<b>65</b> .0	7.1	457	269	266	619
Mercury	5.2	0.08	9.0	0.08	-	-
<b>Vickel</b>	16.8	-	22.9	15.6	19.4	22.5
Potaneium	652 B	-	780 B	1080 B	1290	2100
Selenium	-	-	-		_	-
Bedium	-	-	-	986 B	10300	19900
/anadium	30.0	-	22.5	19.6	18.6	31.8
<b>Dinc</b>	83.3	-	96.1	102	37.0	63.4
Cyanide	_	_		-	-	-

Not detected.

ug/L Micrograms per liter.

mg/kg Milligrams per kliogram.

J Estimated value.

R Unusable value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank						
Sample Depth:		444.000	444.000	414.475	444		
Sample Date:	4/9/92	4/10/92	4/13/92	4/14/92	4/16/92	4/21/92	4/23/92
Units:	ug/L						
Parameter		·		<del></del>		<del></del>	
Numinum	-	_	_	-	_	_	-
<b>Untimony</b>	_	-	_	_	-	-	• -
<b>Arsenic</b>	_	-	-	-	-		-
Berlum	_	-	-	-	-	-	11.8
Berytlium	-	-	-	_	_	-	-
Cadmium	-	-	-	-	-	_	-
Calcium	66.0 B	80.6 B	92.9 B	84.9 B	113 B	138 B	-
Chromium	-	-	-	-	-	-	-
Cobalt		-	-	-	-	-	
Copper	_	-	-	-		••	-
ron	_	-	-	_	-		_
_eed	R	R	R	-	-	_	-
<b>Vlagnesium</b>	-	-	-	-	_	_	÷
Manganese	_	-	_	_	_	-	-
Mercury	-	-	-	_	-	-	_
<b>Vickel</b>	-	_	-	-	-	-	-
Potassium	_	-	-	-	-	-	2180
Selenium		-	-	-	-	-	-
Sodium	-	-	-	-	••	-	-
/anadium	-	_	_	-	-	-	_
Žinc .	22.7 J	R	133 J	40.1	-	-	R
Cyenide	-	_	-	_	_	_	

<sup>--</sup> Not detected.

ug/L. Micrograms per liter. mg/kg Milligrams per kilegram. J. Estimated value.

R Unumble value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank						
Sample Depth:							
Sample Date:	4/27/92	5/4/92	5/5/92	5/6/92	5/7/92	5/8/92	5/13/92
Units:	ug/L	ug/L	ug/t.	ug/L	ug/L	ug/L	ug/L
Parameter							
Numinum	-	_	_	_	_	_	-
Antimony	-	-	-	-	_	-	R
Arsenic	-	-	_		-	-	-
Berlum	-	-	-	_	_		-
Beryllium	-	-	-	-	-	-	-
Cadmium	_	-	-	-	-	_	-
Calcium	18500	169 B	- 114 B	122 B	114 B	139 B	166
Chromium	-	-	-	_	_		_
Cobelt	-	-	-	-	_	-	-
Copper	-	-	-	_	_	-	_
ron	_	_	_	-	-		_
_eed	-	_	-	-	-	_	_
<b>Vagnesi</b> um	6170	-	_	-	-	-	
danganese	_	-	-	_	-	-	-
<b>Aercury</b>	-	-	-	_	_	_	-
<b>lickei</b>	_	-	-	-	-	-	-
Potaesium	1690 B	_	-	-	_		-
ielenium	_	_	_	-	• -	-	_
Sodium	9900	-	-	_	-	-	-
/anadium	-	-	-	-	-	-	_
Zinc	539	34.9	••	_	-	23.9	-
Cyenide	-	_	-	_		-	_

Not detected.

ug/L Micrograms per liter. mg/kg Mittigrams per kilogram.

J Estimated value.
R Unusable value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank						
Sample Depth:							
Sample Date:	5/14/92	5/15/92	5/18/92	5/19/92	5/20/92	5/21/92	5/22/92
Units:	ug/L						
Parameter							
Aluminum		-	-	••	-	_	_
Antimony	R	R	R	-	-	-	_
Arsenic	-	_	-	-	-	-	_
Berium	-	-	_	_		-	-
Beryllium	-	-	-	_	-	_	-
Cadmium	-	-	-	-	-	-	-
Calcium	192 B	165 B	252 B	226 B	251 8	230 B	271
Chromium	-	-	••	-	-	-	_
Cobelt	-	-		-	-		-
Copper	-	-	-	_	_	-	-
iron	-	-	-	-	-	-	327
Lead	-	_	-			-	-
Magnesium	-	-	-	-	-		-
Manganese	-	-	-		-	-	-
Mercury	-	-	-		-	-	_
<b>Nickel</b>	-	-	-	-	-	-	-
Potassium	-	-	_	-	-	-	-
Selenium	-	-	-	-	-	-	-
Sodium	-	-	525 B	-	512 B	-	547
Vanadium	-		-	-	-	-	-
Zinc	-	-	21.6	-	39.6	-	-
Cyanide	-	-	-	-	_		_

Not detected.

ug/L Micrograms per liter. mg/kg Milligrams per kilogram.

J Estimated value.
R Unuestie value.

B Compound is between the contract required detection limit and the instrument detection limit.

Table 5-11. Summary of Target Analyte List Parameters Detected in Subsurface Soil Samples, Sauget Site R, Monsanto Company, Sauget, Illinois.

Sample Location:	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	
Sample Depth:					
Sample Date:	5/26/92	5/27/92	5/28/92	5/29/92	
Units:	ug/L	ug/L	ug/L	ug/L	
arameter					
Juminum	_	-	_	_	
ntimony	-	_	-	_	
rsenic	-	-	-	-	<b>4</b>
ianium	_	-	-	-	
eryllium	_		-	_	
admium	_	_	-		
alcium	281 B	336 B	237 B	316 B	
hromium	_	-	_	_	
cobalt	_	-	_	_	
copper			-		
ron	145	2040	211	73.2 B	
eed	-	-	_	-	
legnesium	_	-	-	_	
langanese		10.6 B	_	_	
lercury			-	-	
lickel	-	-	_	_	
otaesium	-	-	_	_	
elenium	_	-	-	-	
odium	537 B	562 B	535 B	677 B	
anedium	_	_	_	-	
inc	_	20.8	_	-	
y <b>anide</b>	_	-		-	

Not detected.

ug/L Micrograms per liter. mg/kg Milligrams per kilogram.

J Estimated value. R Unumble value.

B Compound is between the contract required detection limit and the instrument detection limit.